KEYSTROKES

calculator activities for young students

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KEYSTROKES

calculator activities for young students

COUNTING and PLACE VALUE

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Introduction

The Keystrokes series provides a wide range of classroom-tested calculator activities for students in grades 2 through 8. The books in the series are:

Keystrokes—Counting and Place Value (grades 2–3)
Keystrokes—Addition and Subtraction (grades 3–6)
Keystrokes—Multiplication and Division (grades 4–6)
Keystrokes—Exploring New Topics (grades 5–8)

Keystrokes—Counting and Place Value is appropriate for grades 2 and 3, and includes activities on number names, number sequence, place value, counting on, counting back, patterns, problem solving, and skip counting. All of the activities have been developed for and used with a variety of textbook series and can be easily integrated into any current mathematics program.

How To Use This Book

Keystrokes—Counting and Place Value is divided into six sections, each one focusing on a different skill or group of skills. Activities that require similar abilities and similar uses of the calculator have been grouped together. Each section is preceded by an overview, which explains the purpose of the activities and the formats that will be used. These overviews will be especially helpful to you in deciding which activities are most appropriate for a particular class or student.

At the top of each page, you will see a listing of skills, ordered by emphasis, with the first skill giving the main focus of that activity. Many of the pages include, as well, teaching suggestions for implementing the activities. Several of the pages in this book require teacher direction or additional guidance. These pages can be identified by the special "teacher creature," which will alert you that some extra preparation may be involved.

Teacher creature

These Keystrokes activities should be used with a four-function calculator with eight-digit display. The calculators that you and your class are using should also have a constant addend feature that enables you to "count," or display consecutive numbers, in the following manner:

Press ⊕ ① ⊜ ⊜ ⊜ ⊜ ⊜ . . . .
Your calculator should display 1, 2, 3, 4, 5, ...

It is important that you check your calculator for this particular function, for the activities that require this capability include pages 9 through 15, 24 through 38, and 48 through 57.

If your calculator does not have this capability, you should check each activity carefully before using it.

Getting Started

If your students have never used calculators before, they may need several minutes to become familiar with them. Students are typically very excited about using calculators for the first time. Experience has shown that letting them experiment with the calculator for a few minutes helps reduce this excitement to a manageable level. At the end of this time, most students will be eager for guidance.

After students have had a chance to explore on their own, you may wish to provide a brief description of the keys and how they are used. In particular, students should understand that ⓒ must be pressed after each exercise.

Helpful Hints

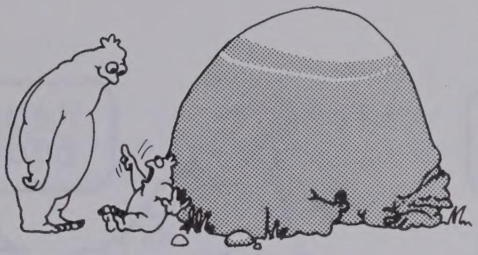
A one to one correspondence between students and calculators is ideal. Many calculator activities, however, can be effectively used by two students sharing one calculator.

Boxes that are similar to those in which vinegar and cooking oil are shipped provide excellent storage for calculators. These boxes can often be obtained from grocery stores or supermarkets.

Remind students to turn off the calculators that are not being used. Assign to one of your students the responsibility of checking the storage box after each lesson to see that all of the calculators are turned off.

If the calculators are to remain in your classroom all year, you will find it helpful to have the students tape their names on the calculators. This will help promote a sense of responsibility.

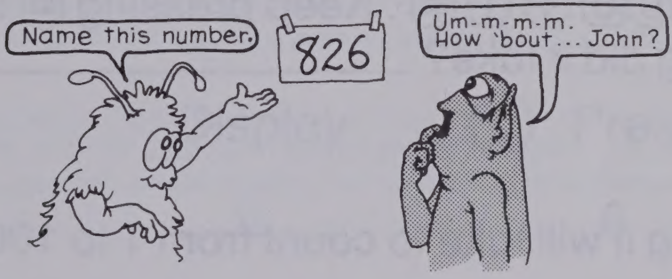
Building Numbers



How big is big? Size is relative, and students need personal experiences with large numbers before they can develop a sense of "size." Counting with the calculator is a physical activity through which students relate the size of a number to the amount of time needed to count to it.

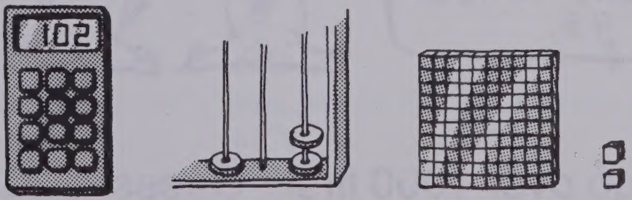
Page 2 shows students how to count on their calculators. They learn to count by ones, fives, and nines. The physical link between pressing the keys and watching the display is emphasized—in this way, students begin to sense how "big" numbers are. Counting to 1000 on the calculator takes over 3 minutes, considerably more time than it takes to count to 100. Students also learn that it takes less time when counting by fives, and even less time when counting by nines.

This activity should be used as a starting point from which more exploration develops.

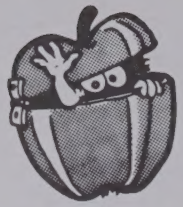

Name this number.
826
Um-m-m-m. How 'bout... John?

Pages 3 through 6 offer activities in number names. Students often have difficulty writing numerals, and the calculator provides an easy way to transfer numbers into numerals. The calculator's display is easily erased, thus the student is not discouraged by mistakes. Through teacher direction, students begin to associate the verbal representation of numbers with the written and symbolic representations.

These activities also illustrate place value ideas and are especially suitable for use with manipulative models of our place value system. For example:



Students should be encouraged to explore further, adding on to their numbers until they have five-, six-, and seven-digit numbers. You'll find that your students are eager to continue their explorations.



How Big is 1000?

Name ____________________

Time yourself.
Press [+],[1],[=].
Keep pressing [=].
Stop at 100.

① How long did it take to count to 100? ____________________

Students will watch the display more closely if they are encouraged to stop exactly at 100. Patterns may be more obvious to students who pay close attention to each number as it is displayed.

② John's 🖩 shows 900. Guess how long it will take him to count to 1000? ____________________

③ Try it. Press ⑨⓪⓪ ⊕ ① ⊜ . Keep pressing ⊜ until you reach 1000. How long did it take? ____________________

You may wish to have your students read each number aloud as it is displayed. Students will find that it takes longer to count aloud from 900 to 1000 than from 1 to 100. Students should also notice that these two counting sequences take the same time when using just the calculator.

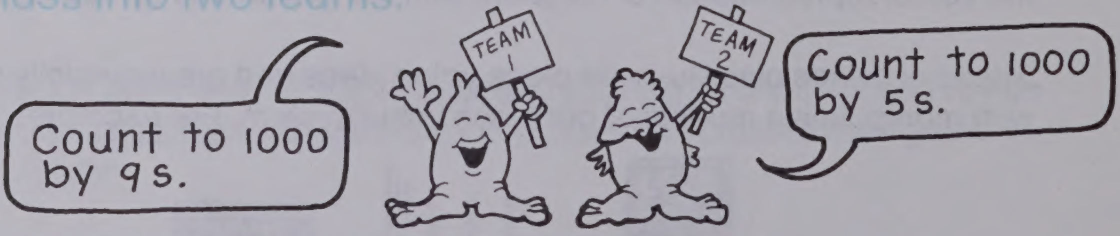
④ Guess how long it will take to count from 1 to 1000? ______

Students may either use the information from problems 1 and 3 to make their guesses, or they may simply make "wild" guesses.

⑤ Count from 1 to 1000. How long did it take? ____________________

Students may need help in keystroking. Tell them to enter + 1 = = = . . . until they reach 1000.

⑥ Divide the class into two teams.

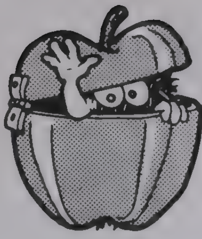


Students will need help in keystroking. To count by 9s, enter + 9 = = = . . . To count by 5s, enter + 5 = = = . . .

Which team will go over 1000 first? Guess. ____________________

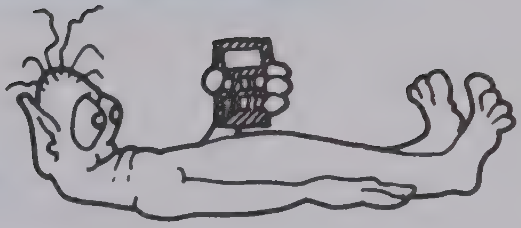
Try it. Which team won? ____________________

You will want to act as timekeeper for this activity. Races can be extended to include counting by 2s, 4s, etc. On all questions, students should be encouraged to discuss their results.



Naming Numbers

Name ____________



①

Press	Display
5	______
0	______
0	______

②

Press	Display
9	______
0	______
0	______

③

Press	Display
4	______
0	______
0	______

④

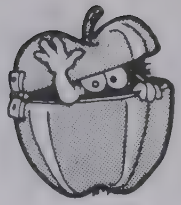
Press	Display
6	______
0	______
0	______

⑤

Press	Display
2	______
0	______
0	______

⑥

Press	Display
1	______
0	______
0	______



Name Games

Name ____________________

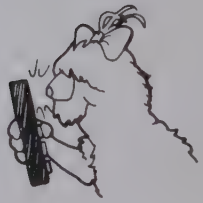
①

Press		Display
4	four	________
5	forty-five	________
6	four hundred fifty-six	________

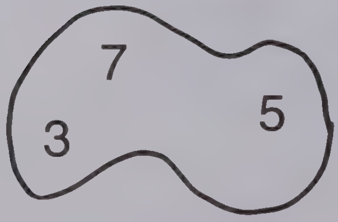
②

Press		Display
2	two	________
0	twenty	________
3	two hundred three	________

	Display
③ two hundred eighty-nine	__________
④ eight hundred twenty-nine	__________
⑤ nine hundred twenty-eight	__________

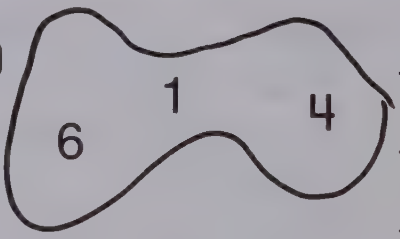


⑥



____
____
____

⑦



____
____
____

Place Value
Naming Numbers
Addition

Sum Check

Name ______________________

①

one hundred	100
nine	
sixty	
Check: 169	

②

five hundred	
two hundred	
eighty	
Check: 780	

③

three hundred	
twenty	
seven	
forty	
Check: 367	

④

seven	
four hundred	400
six	
seventy	
Check: 483	

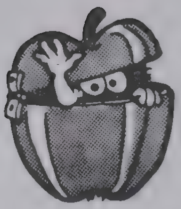
⑤

forty	
four hundred	
fourteen	
Check: 454	

⑥

three	
three hundred	300
thirty	
Check: 333	

Place Value
Naming Numbers
Addition

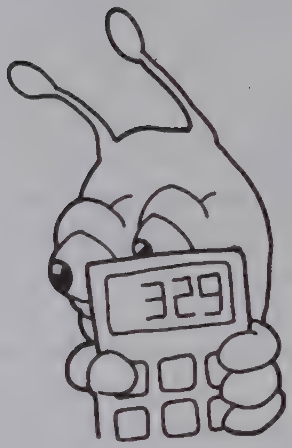


Place Chase

Name ______________________

①

eight	
one	
twenty	
three hundred	
Check: 329	



②

eighty	
thirty	
six hundred	
seven	
Check: 717	

③

three hundred six	
seventy-four	
eight hundred sixty-five	
Check: 1245	

④

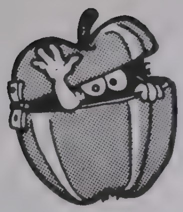
three hundred twelve	
one hundred five	
seven hundred nine	
Check: 1126	

⑤

one hundred twenty-one	
six hundred three	
ninety-four	
thirty-six	
Check: 854	

⑥

four hundred ninety	
eight hundred eleven	
one hundred one	
fifty-six	
Check: 1458	



Charting Numbers

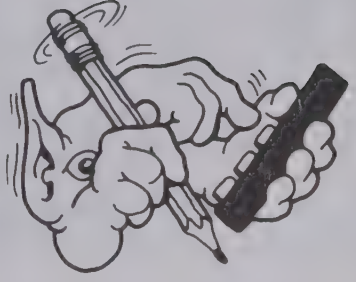
Name ____________________

①

hundreds	tens	ones

②

hundreds	tens	ones



③

hundreds	tens	ones

④

hundreds	tens	ones

⑤

hundreds	tens	ones

⑥

hundreds	tens	ones

⑦

hundreds	tens	ones

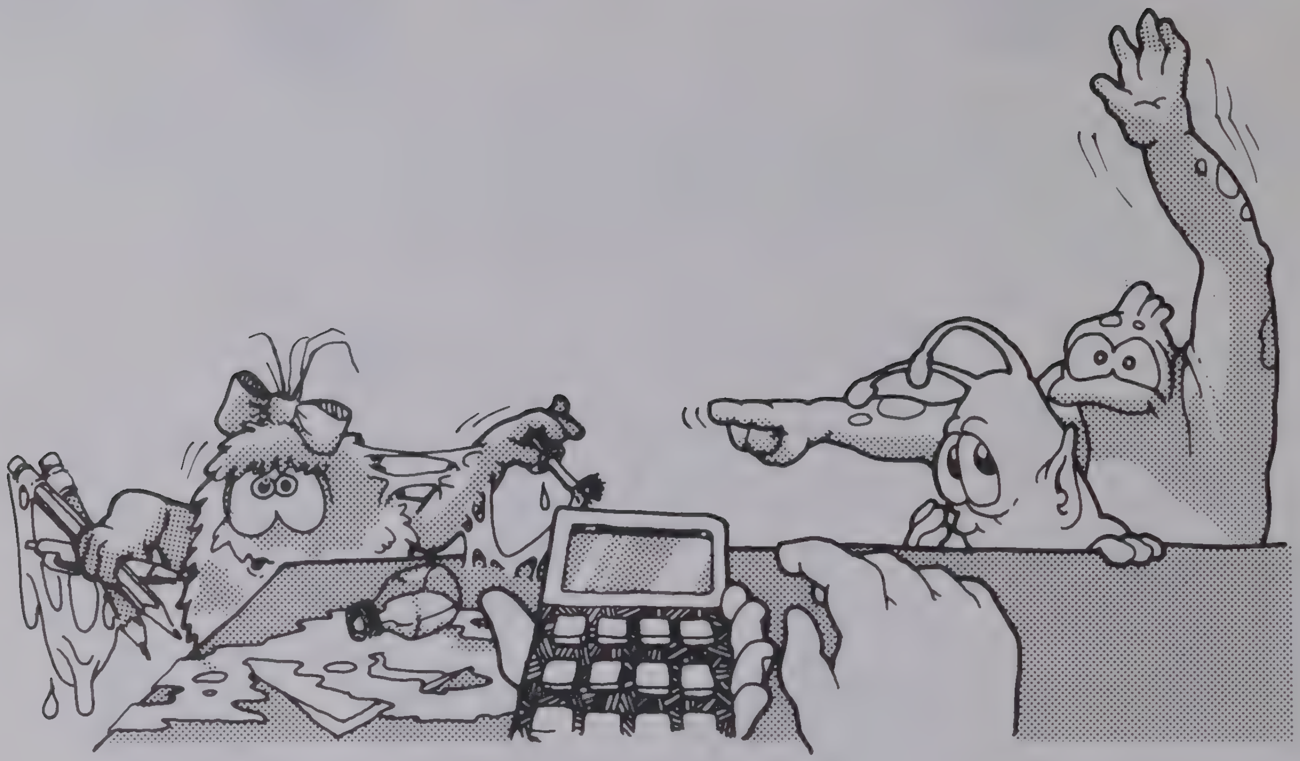
⑧

hundreds	tens	ones

⑨

hundreds	tens	ones

Counting On and Back



The next time an eager student tips over a bottle of glue in your desk drawer, don't get upset. Just use your calculator to count to 10. Try it!

All you have to do is press + 1 = = = = = = = = = =

Your students also will enjoy counting with their calculators. On the following pages, students will be counting on and counting back. They will be counting by twos, threes, and fives. Some of the keystroking is shown below.

+ 1 = = . . .
Counting on by ones

34 + 1 = = . . .
Counting on by ones, starting at 34

+ 5 = = = = . . .
Counting on by fives

8 + 5 = = . . .
Counting on by fives, starting at 8

The keystroking for counting back is just as easy.

10 − 1 = = . . .
Counting back by ones, starting at 10

150 − 5 = = . . .
Counting back by fives, starting at 150

Counting on and back can be very useful. Students become aware of number sequence, and they are better equipped to understand what is happening when they add and subtract. Counting back can also be used to introduce negative numbers.

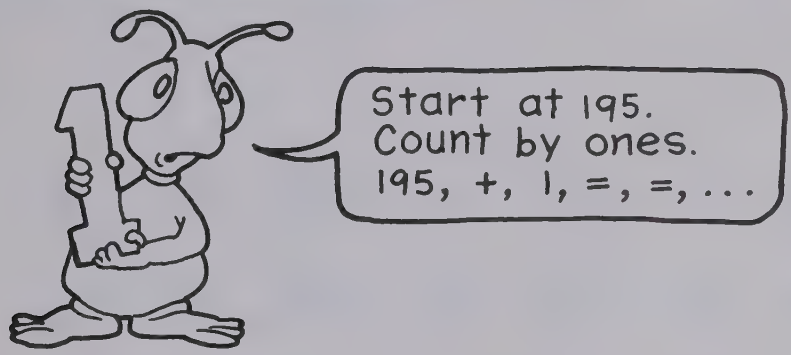
All of the following activities can be extended by you to include other sequences, but you'll probably find that your students are eager to continue on their own, finding new ways to count on and back.

One More

Name ____________

Start at 34. Count by ones.
34, +, 1, =, =, =, . . .
Write each number.

34, ______ , ______ , ______ , ______ , ______ , ______ , ______


Start at 195.
Count by ones.
195, +, 1, =, =, . . .

195, ______ , ______ , ______ , ______ , ______ , ______ , ______

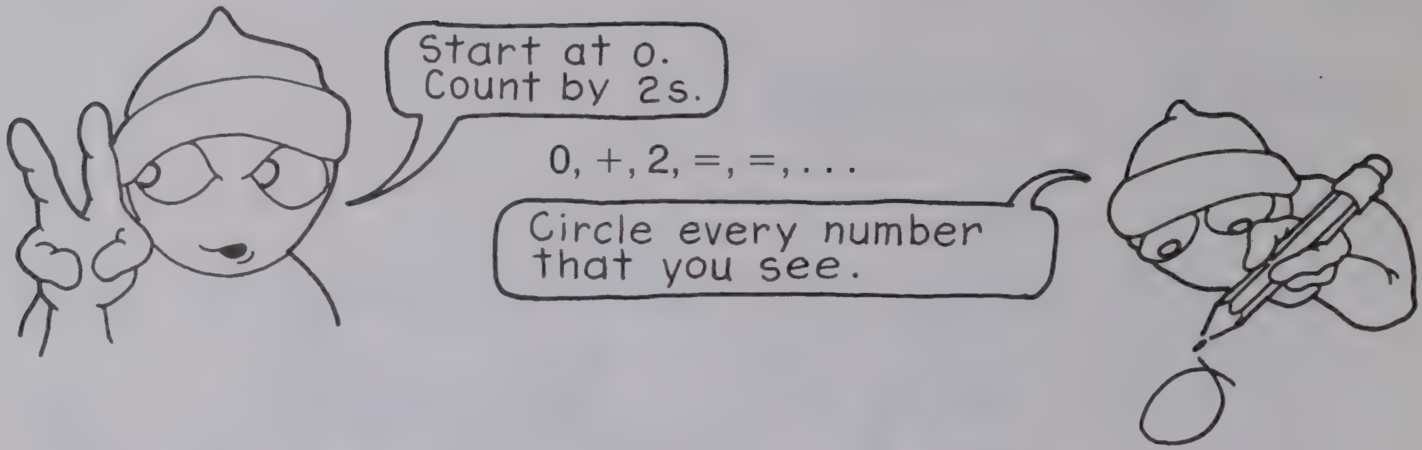
What number is next?
Add 1 to each number. Write your answer.

327, +, 1, =

① 327, ______
② 101, ______
③ 409, ______
④ 249, ______
⑤ 422, ______
⑥ 376, ______
⑦ 310, ______
⑧ 99, ______
⑨ 989, ______
⑩ 329, ______

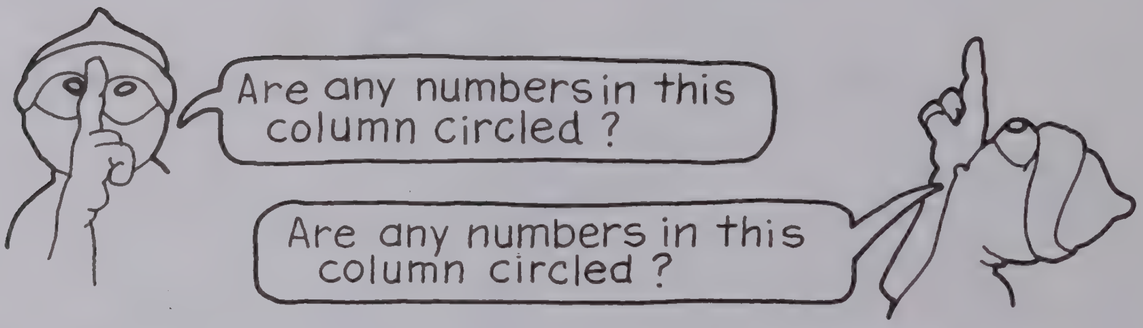
Two by Two

Name ______________________


Start at 0.
Count by 2s.
Circle every number that you see.

0, +, 2, =, =, . . .

1	②	3	④	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50


Are any numbers in this column circled ?
Are any numbers in this column circled ?

① How many columns have circles? ______________

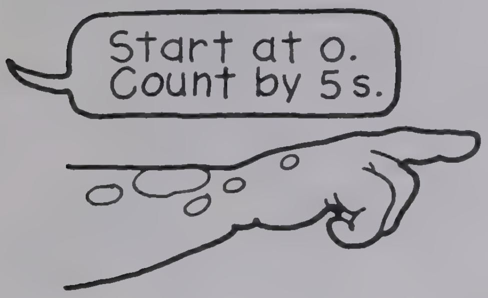
② How many columns have no circles? ____________

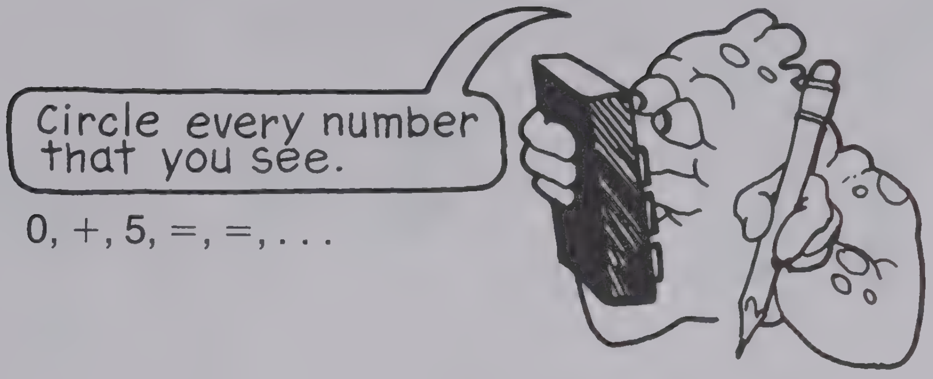
③ Keep counting by 2s. Which numbers do you see?

62 65 70 77 83 88 91 94 99 100

After Five

Name ____________________


Start at 0.
Count by 5s.



0, +, 5, =, =, . . .

1	2	3	4	⑤	6	7	8	9	⑩
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50

① What patterns do you see? ____________________

____

____

② Think of numbers over 100 that will appear on your 🖩 if you keep counting by 5s. ____________________

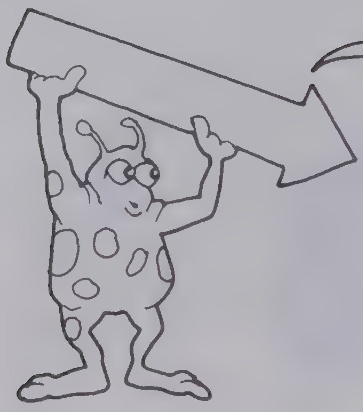
Keep counting by 5s. Did you see your numbers? ________

③ Which numbers will you see if you count by 5s?
Circle your guesses. Check with your 🖩 .

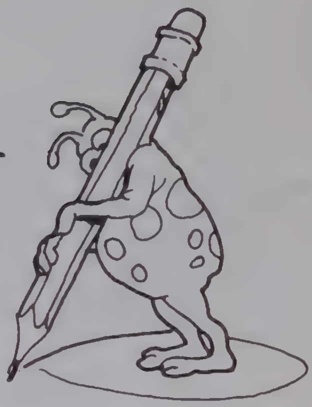
135 109 140 115 151 122 120

Counting On Threes

Name ______________________


Start at 0.
Count by 3s.

0, +, 3, =, =, . . .



1	2	③	4	5	⑥	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50

① What patterns do you see? ______________________

____

② Name two other numbers that you think you will see if you continue counting. ______________________

Keep counting by 3s. Did you see your numbers? ________

③ Which of these numbers will you see?
Circle your guesses. Check with your 🖩.

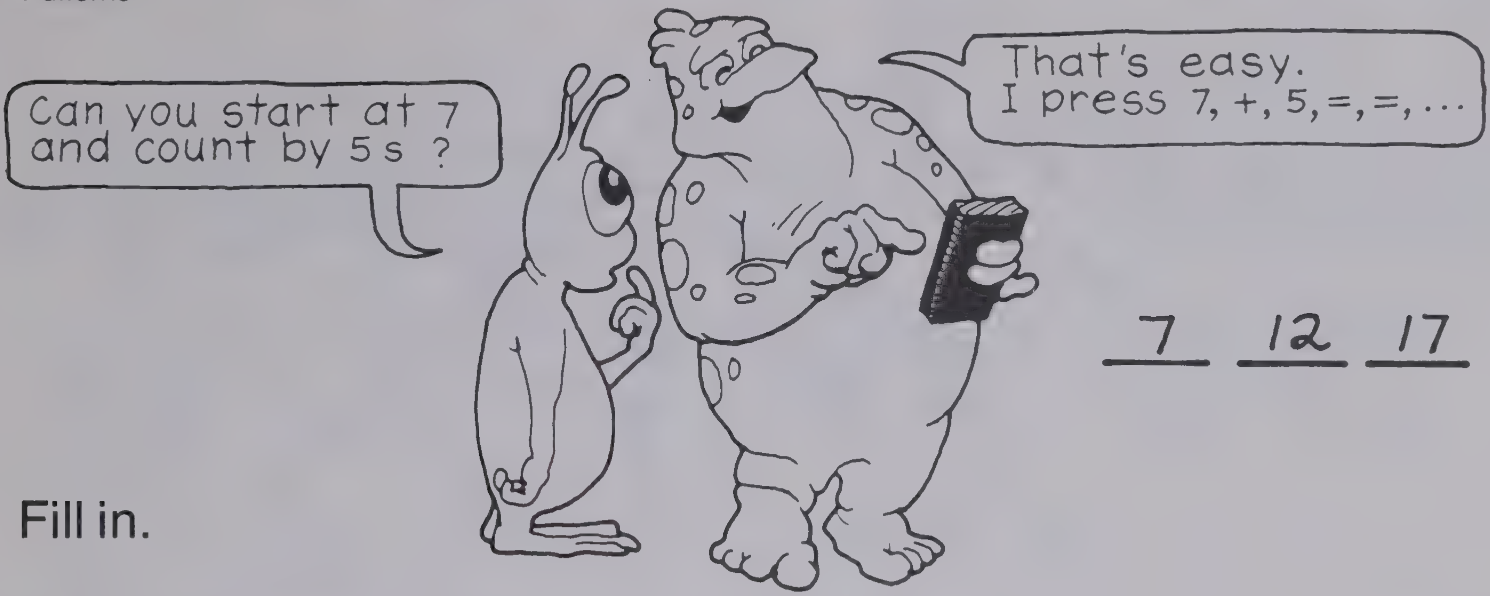
100 72 161 90

201 93 113

Counting
Skip Counting
Patterns

Skipping Around

Name ____________________


Can you start at 7 and count by 5s ?
That's easy. I press 7, +, 5, =, =, ...

7 12 17

Fill in.

① 9+5= = = = = =

14

② 10+5= = = = = =

15

③ 49+5= = = = = =

④ 50+5= = = = = =

⑤ 96+1= = = = = =

⑥ 906+1= = = = = =

Counting Backwards

Name ______________________

Can you make your count like this ?
Sure. I just count backwards by ones.

10, 9, 8, 7, 6, . . .

10, −, 1, =, =, =, . . .

Fill in.

① 5−1= 4 = 3 = ______ = ______ = ______ = ______

② 15−1= 14 = ______ = ______ = ______ = ______ = ______

③ 20−1= ______ = ______ = ______ = ______ = ______ = ______

④ 25−1= ______ = ______ = ______ = ______ = ______ = ______

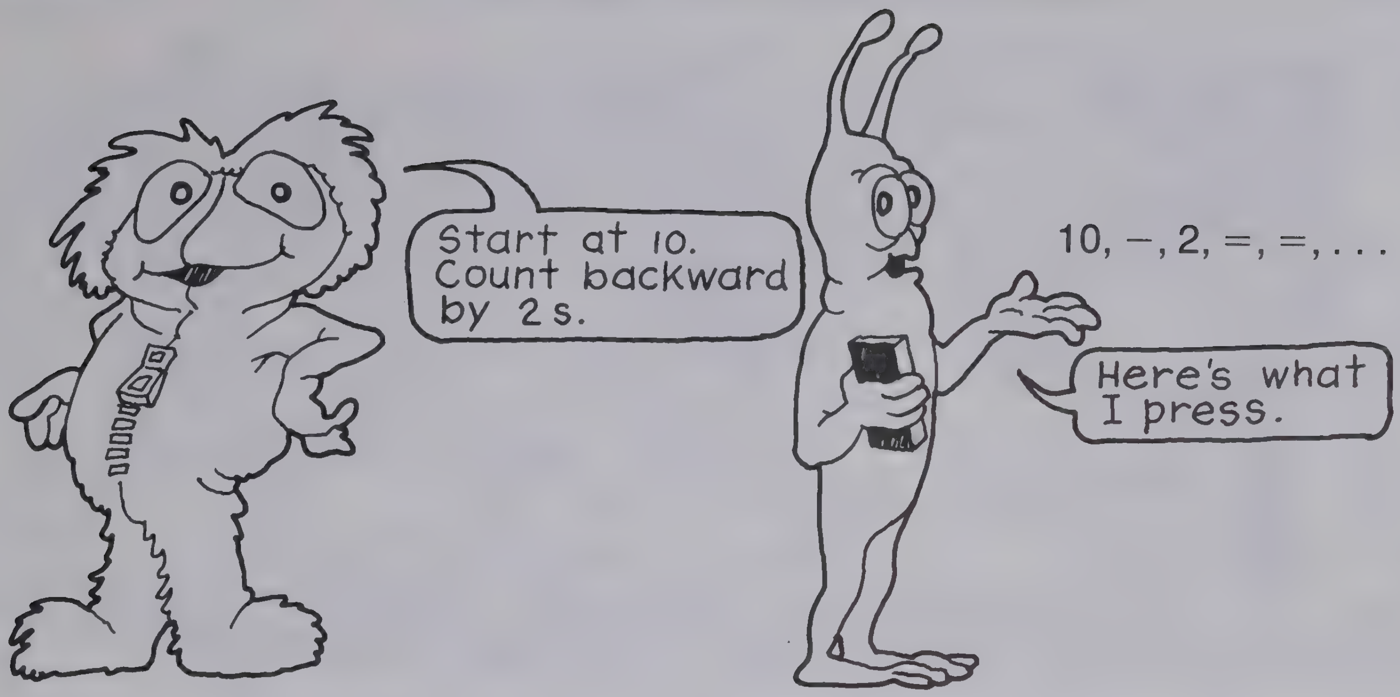
⑤ 50−1= ______ = ______ = ______ = ______ = ______ = ______

⑥ 75−1= ______ = ______ = ______ = ______ = ______ = ______

Counting Back
Patterns

Back Again

Name ____________________


Start at 10. Count backward by 2s.
Here's what I press.

10, −, 2, =, =, . . .

Fill in.

① 15−2= ____ = ____ = ____ = ____ = ____ = ____

13 11

② 20−2= ____ = ____ = ____ = ____ = ____ = ____

③ 25−2= ____ = ____ = ____ = ____ = ____ = ____

④ 50−2= ____ = ____ = ____ = ____ = ____ = ____

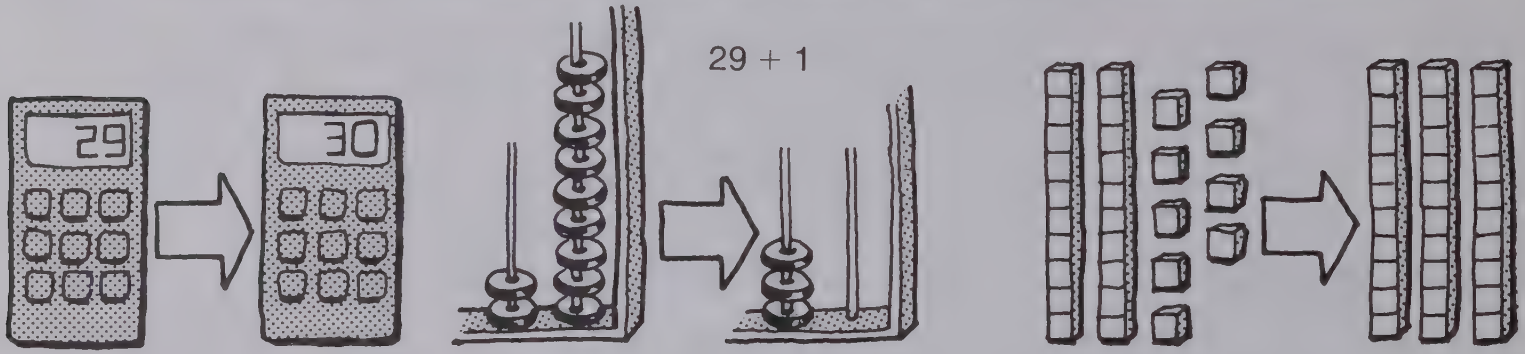
⑤ 100−10= ____ = ____ = ____ = ____ = ____ = ____

⑥ 1000−10= ____ = ____ = ____ = ____ = ____ = ____

Place Value and Regrouping

A good understanding of place value is essential for students who are just learning about our number system, or just developing computational skills. There are many excellent manipulatives that teachers are using to demonstrate place value and regrouping, and the calculator may be used to complement these aids.

Here are several manipulative models that could be used to demonstrate a problem.



The activities in this section allow students to experiment with numbers and the digits that make up numerals. Through this experimentation, they learn more about place value and how digits can represent different values. Students will be adding groups of ones, tens, and hundreds on their calculators, watching the displays as each new total appears. Students will also be adding 1 to numbers that end in 9, and subtracting 1 from numbers that end in 0. The immediate response of the calculator helps reinforce what they have already learned with manipulatives.

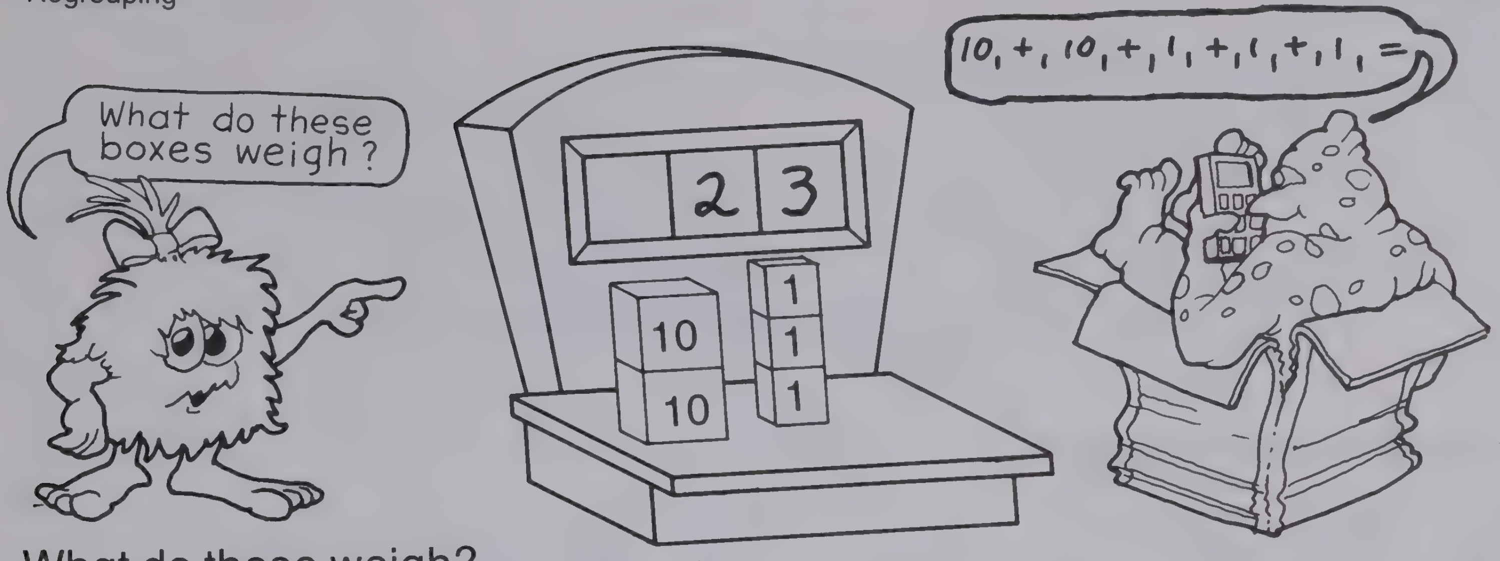
The ability of the calculator to flash an instant response is especially effective with activities like those on pages 20 and 22. After entering three 9s in the calculator, for example, the student adds 1 and immediately sees a display that looks quite different—a number that has zeros, and one more digit. You'll find that your students react positively to this kind of feedback.

Extensions of these place value activities can include experiments with multidigit numbers that end in 99 or in 999. Students should be encouraged to explore the many possibilities.

Place Value
Addition
Regrouping

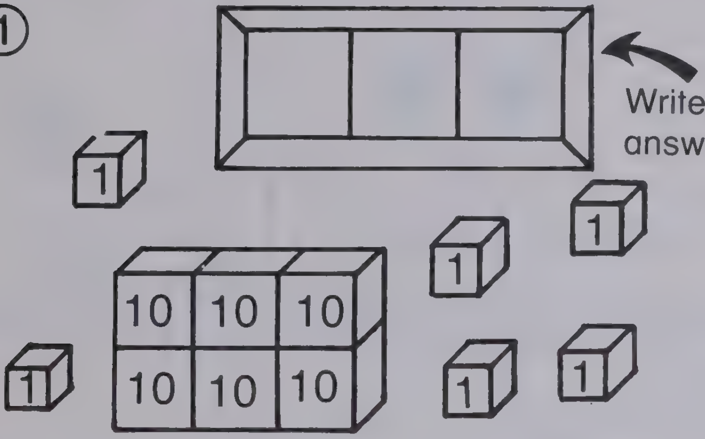
Boxes A-weigh

Name ____________________


What do these boxes weigh?
2 3
10
10
1
1
1
10 + 10 + 1 + 1 + 1 =

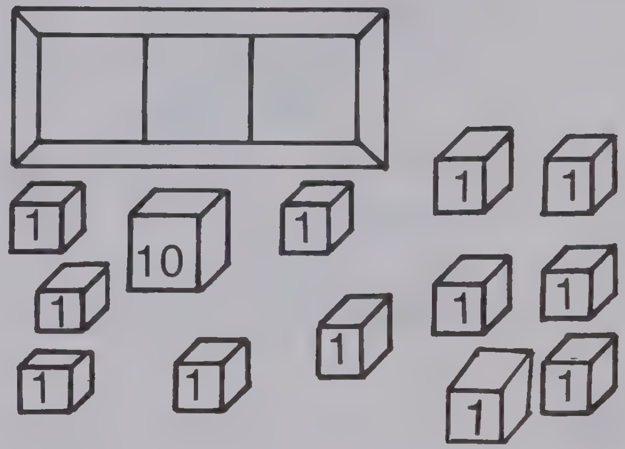
What do these weigh?

①

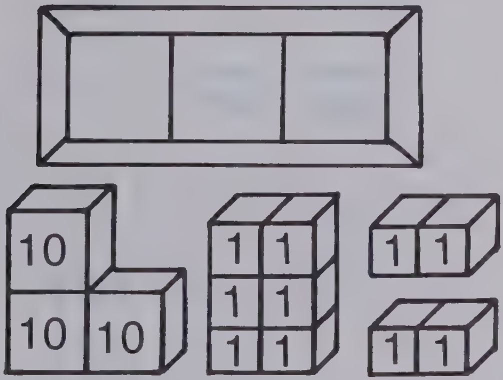


Write your answer here.

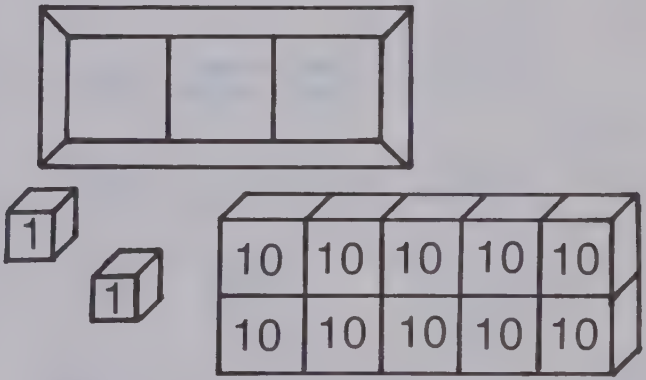
②



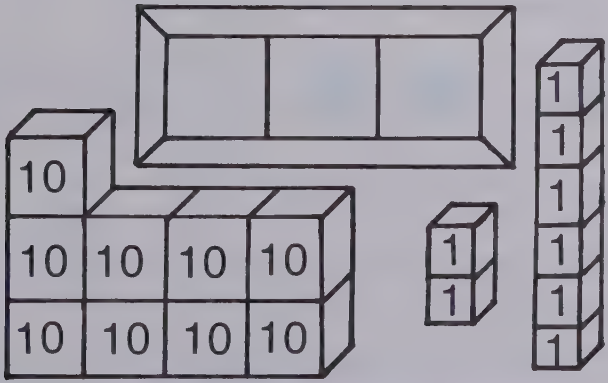
③



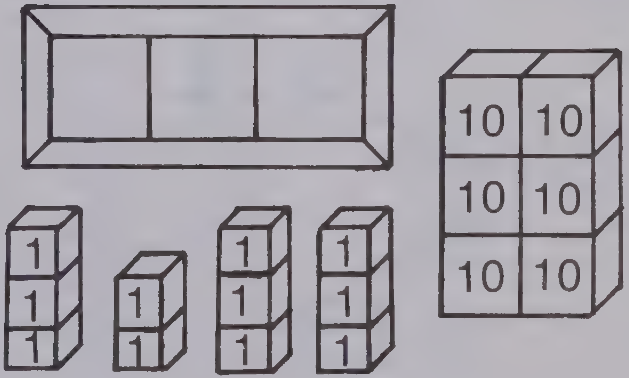
④



⑤

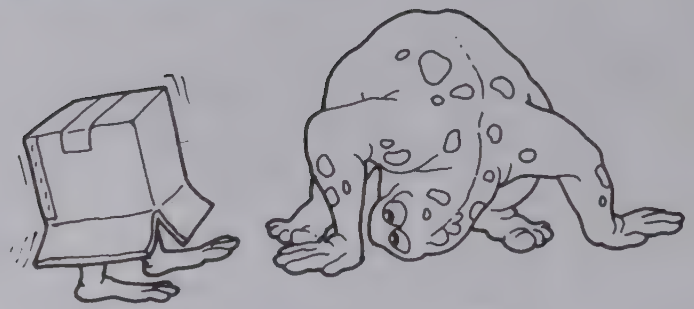


⑥



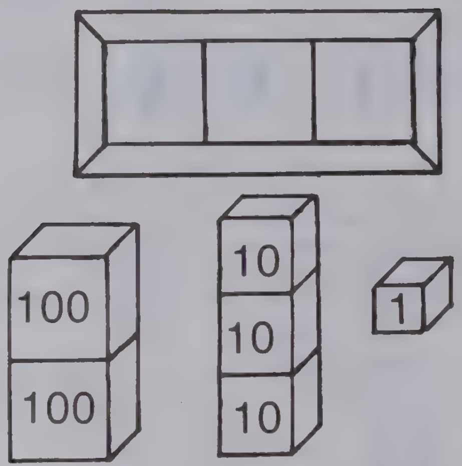
Weight Watching

Name ____________________

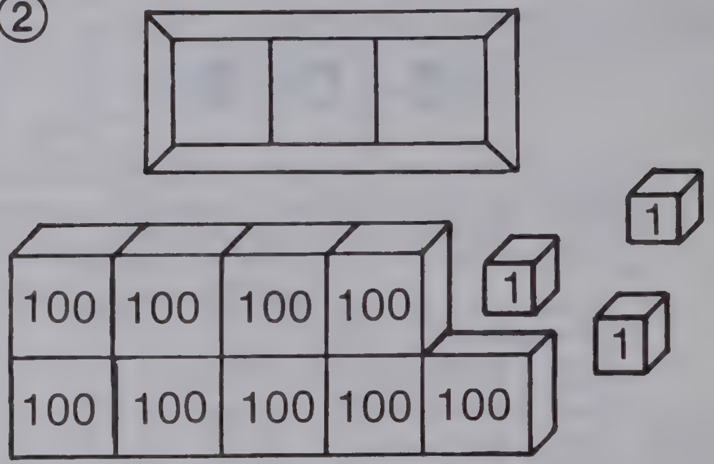


What do these weigh?

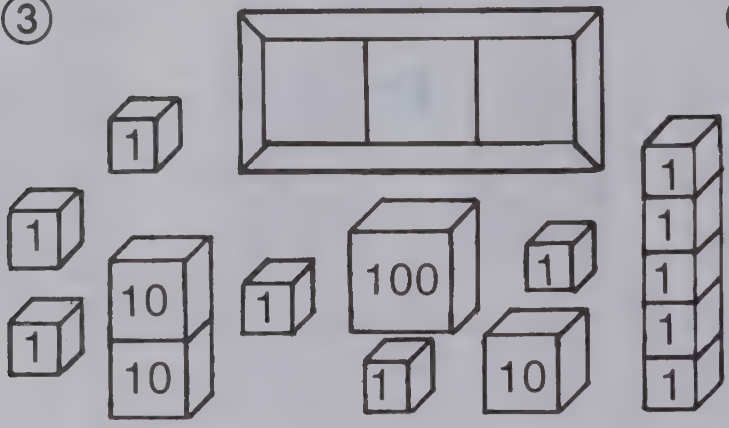
①



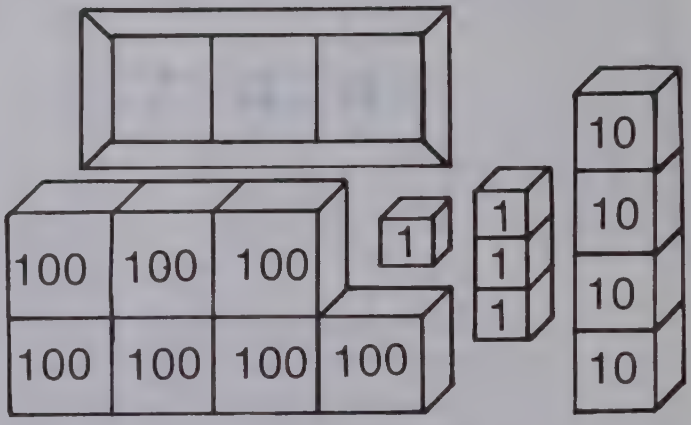
②



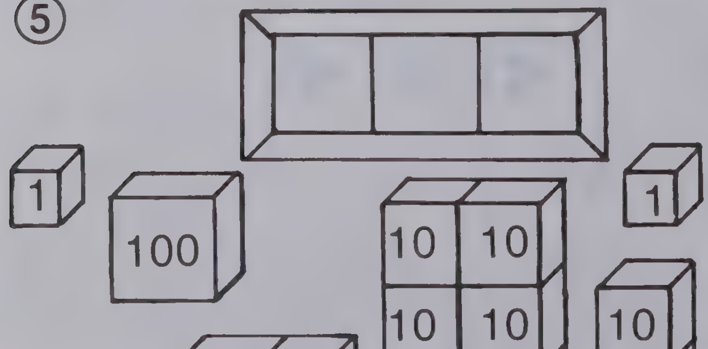
③



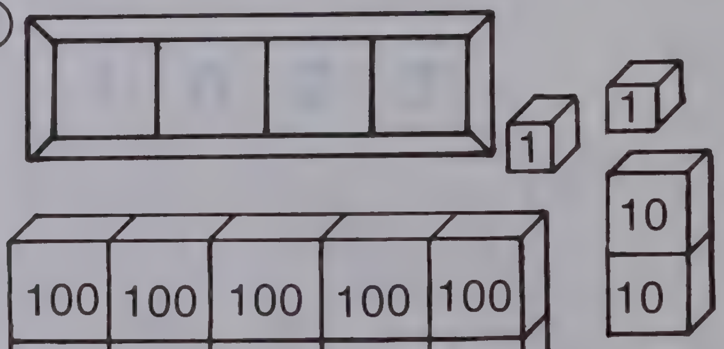
④



⑤



⑥



Place Value
Regrouping
Patterns

The Number After

Name ____________________

What number comes after 29 ?
I'll use my 🖩 to find out.
29, +, 1, =
30

Guess what number comes after.　　Use your 🖩 to check.

Write your guess here.

① 39 ______ 39 + 1 = ______

② 59 ______ 59 + 1 = ______

③ 99 ______ 99 + 1 = ______

④ 109 ______ 109 + 1 = ______

⑤ 190 ______ 190 + 1 = ______

⑥ 199 ______ 199 + 1 = ______

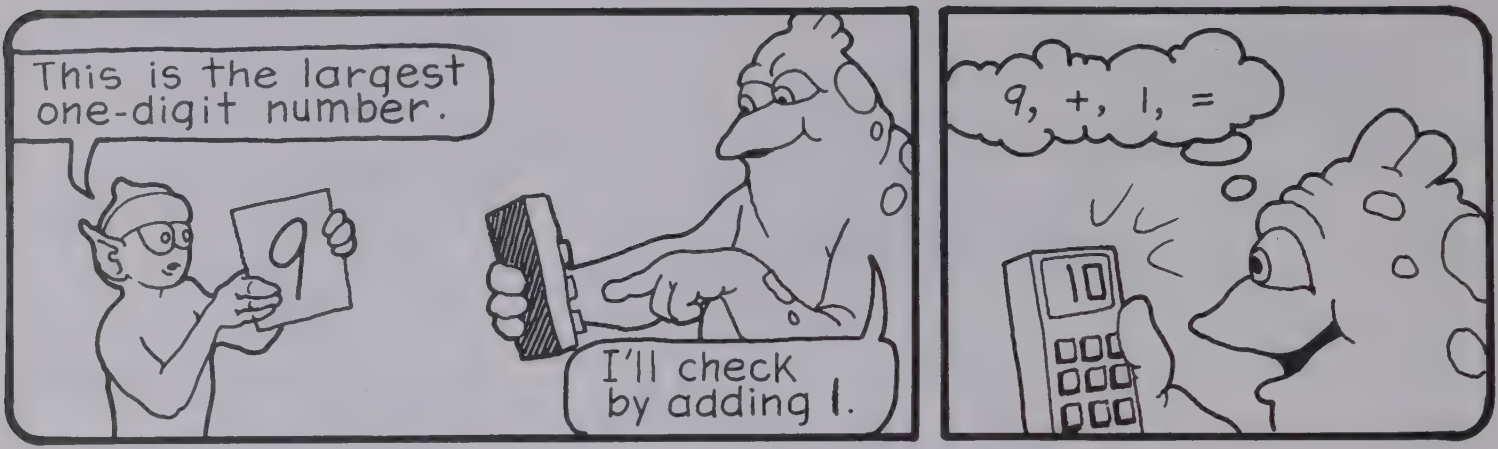
⑦ 289 ______ 289 + 1 = ______

⑧ 999 ______ 999 + 1 = ______

Place Value
Regrouping
Patterns

Digit Fidget

Name ____________________


This is the largest one-digit number.
9
I'll check by adding 1.
9, +, 1, =
10

Enter in your 🖩 Write the number here.

① largest three-digit number ________ + 1 = ________

② largest four-digit number ________ + 1 = ________

③ largest five-digit number ________ + 1 = ________

④ largest six-digit number ________ + 1 = ________

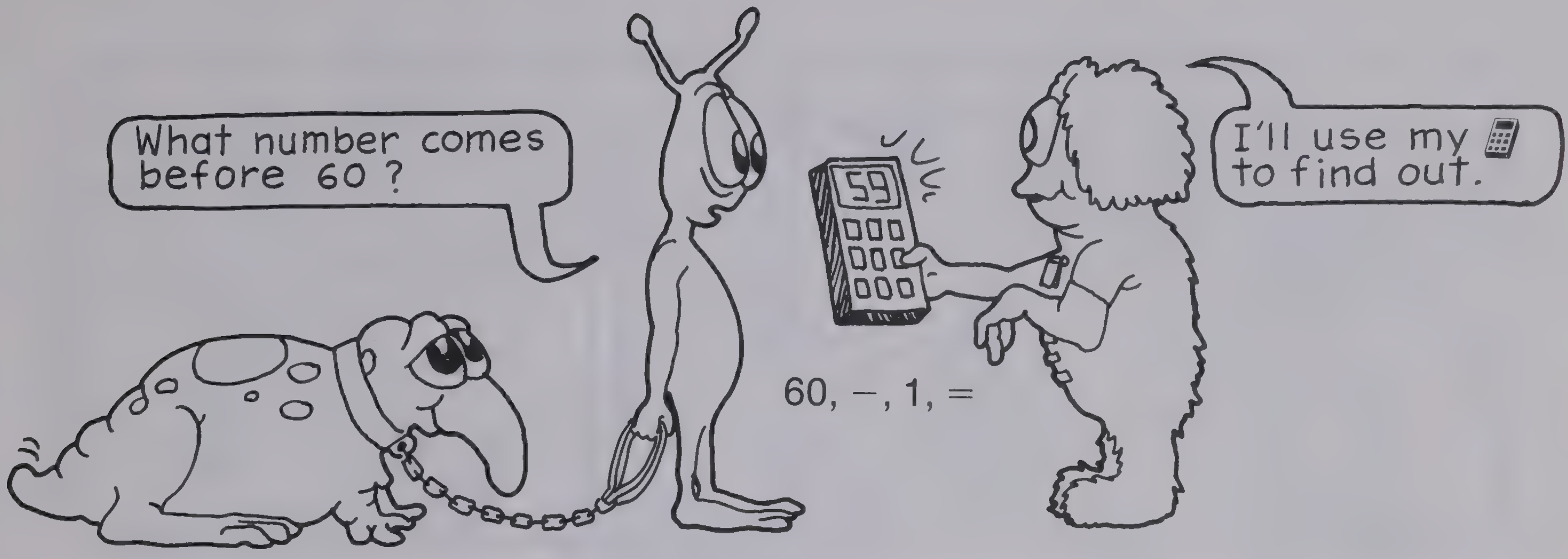
⑤ largest seven-digit number ________ + 1 = ________

⑥ Enter the largest eight-digit number.

Add one. What do you see? ____________________

The Number Before

Name ____________________


What number comes before 60 ?
59
60, −, 1, =
I'll use my 🖩 to find out.

	Guess what number comes before.		Use your 🖩 to check.	
①	20	________	20 − 1 =	________
②	80	________	80 − 1 =	________
③	100	________	100 − 1 =	________
④	190	________	190 − 1 =	________
⑤	210	________	210 − 1 =	________
⑥	401	________	401 − 1 =	________
⑦	909	________	909 − 1 =	________
⑧	1000	________	1000 − 1 =	________

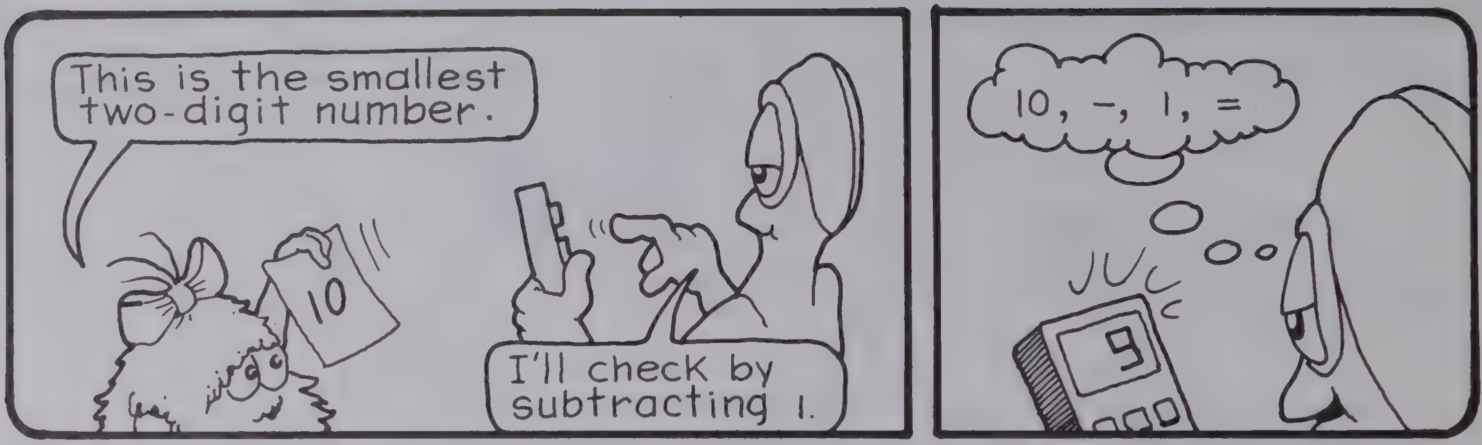
Write your guess here.

Write what your 🖩 shows.

Place Value
Regrouping
Patterns

The One Before

Name ____________________


This is the smallest two-digit number.
10
I'll check by subtracting 1.
10, −, 1, =
9

Enter in your 🖩 Write the number here.

① smallest three-digit number ____________ − 1 = ____________

② smallest four-digit number ____________ − 1 = ____________

③ smallest seven-digit number ____________ − 1 = ____________

④ smallest six-digit number ____________ − 1 = ____________

⑤ smallest five-digit number ____________ − 1 = ____________

⑥ smallest eight-digit number ____________ − 1 = ____________

Patterns

The following activities will allow students to use their counting on and counting back techniques to develop and build patterns. Some of the problems that the student will be doing involve keying in a rule and copying the display as the calculator completes the pattern. Other more difficult problems ask the student to first discover the rule and then complete the pattern.

In studying the patterns, students should pay attention to the sequence of numbers, always keeping in mind certain questions: How do the numbers change? Do they increase or decrease? By how much? Is the change constant?

After students have learned to ask these questions as they look at a pattern, they will be able to find the rules more easily. As students guess different rules, it is important that each rule be tested. Emphasize that a rule is correct only if the numbers in the display appear in exactly the same sequence as the numbers on the paper.

Some of the activities in this section challenge the student to use what has been learned to predict patterns. This particular type of activity requires a good understanding of place value. Page 38, for example, explores the patterns that are created when the rule is "subtract 100." Students will find that only one digit in the original number changes as the pattern progresses.

Number patterns are infinite, and those that are shown in these activities can be extended as far as your students' imaginations. The reaction of your class will help you determine which patterns to extend, and how far. But you may find that the natural curiosity of your students extends beyond what you expect.

Skip Counting
Patterns
Problem Solving

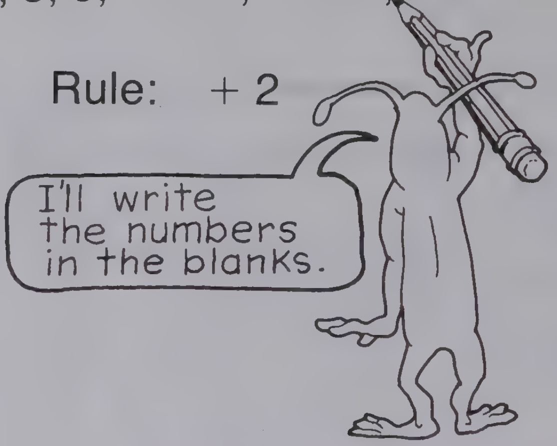
Follow the Rule

Name ____________

1, 3, 5, 7, 9, 11

Rule: + 2

I can finish this pattern.
1, +, 2, =, =, . . .


I'll write the numbers in the blanks.

① 9, 11, 13, ____, ____, ____, ____, ____, ____
Rule: + 2

② 6, 8, 10, ____, ____, ____, ____, ____, ____
Rule: + 2

③ 1, 4, 7, ____, ____, ____, ____, ____, ____
Rule: + 3

Find the rule. Then complete the pattern.

④ 2, 5, 8, ____, ____, ____, ____, ____, ____
Rule:

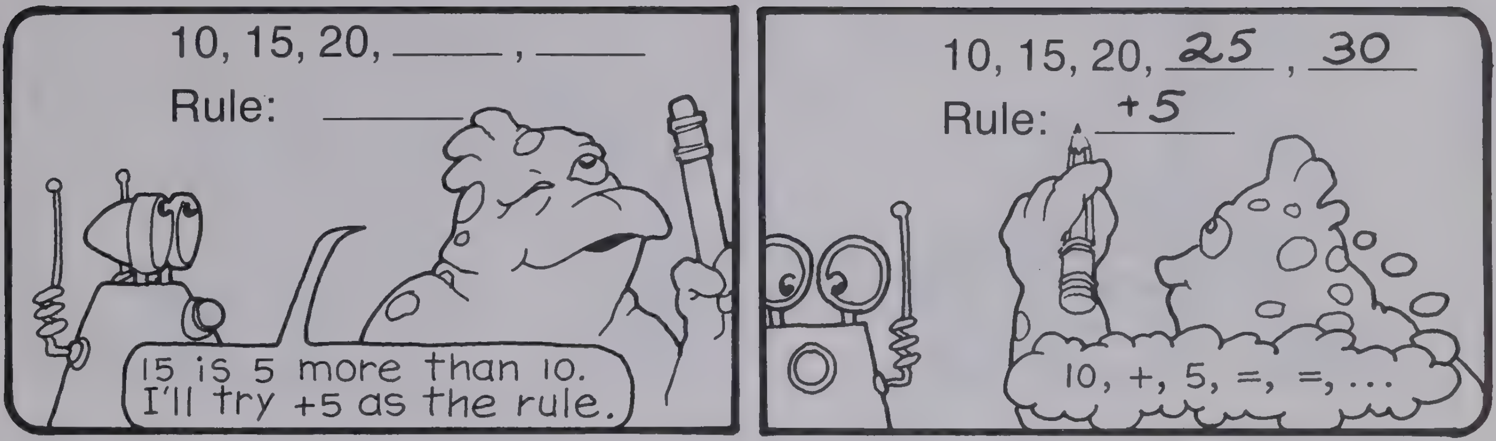
⑤ 90, 92, 94, ____, ____, ____, ____, ____, ____
Rule:

⑥ 20, 23, 26, ____, ____, ____, ____, ____, ____
Rule:

Skip Counting
Patterns
Problem Solving

Pattern Play

Name ____________________


10, 15, 20, ____, ____
Rule: ____
15 is 5 more than 10. I'll try +5 as the rule.
10, 15, 20, 25, 30
Rule: +5
10, +, 5, =, =, ...

① 6, 11, 16, ____, ____, ____, ____, ____
Rule: + 5

② 75, 80, 85, ____, ____, ____, ____, ____
Rule: + 5

③ 80, 90, 100, ____, ____, ____, ____, ____
Rule: + 10

Find the rule. Then complete the pattern.

④ 47, 57, 67, ____, ____, ____, ____, ____
Rule: ____

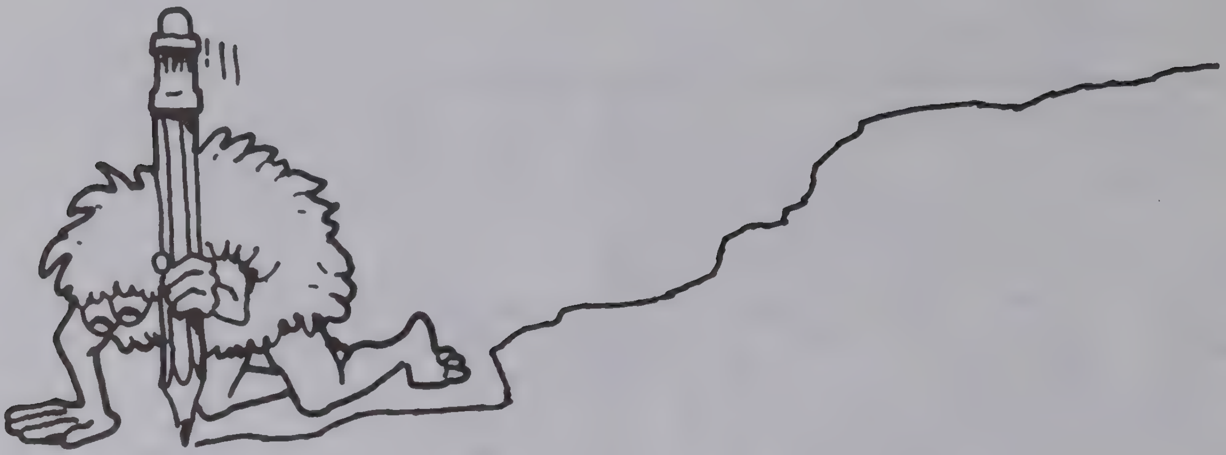
⑤ 47, 52, 57, ____, ____, ____, ____, ____
Rule: ____

⑥ 115, 215, 315, ____, ____, ____, ____, ____
Rule: ____

Patterns
Skip Counting
Problem Solving

Match a Rule

Name ____________________



Draw a line from each rule to its pattern.
Complete the pattern.

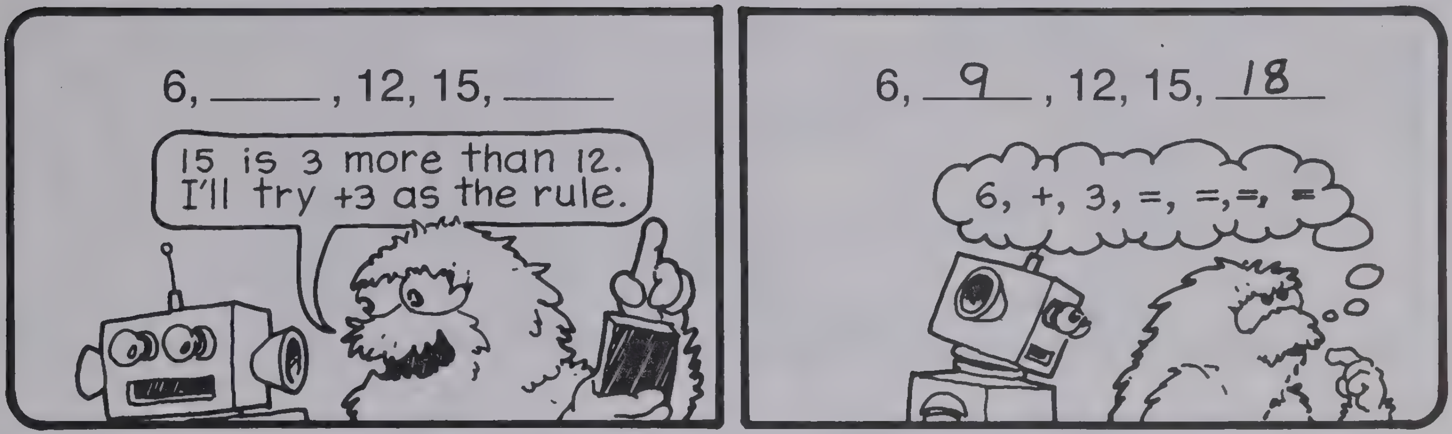
Rule	Pattern
+ 2	12, 17, 22, ______, ______, ______
+ 3	12, 22, 32, ______, ______, ______
+ 5	12, 112, 212, ______, ______, ______
+ 10	12, 14, 16, 18, 20, ______
+ 100	12, 15, 18, ______, ______, ______

Rule	Pattern
+ 2	20, 26, 32, ______, ______, ______
+ 4	20, 30, 40, ______, ______, ______
+ 5	20, 22, 24, ______, ______, ______
+ 6	20, 25, 30, ______, ______, ______
+ 10	20, 40, 60, ______, ______, ______
+ 20	20, 24, 28, ______, ______, ______

Patterns
Skip Counting
Problem Solving

Pattern Power

Name ____________


6, ____, 12, 15, ____
15 is 3 more than 12. I'll try +3 as the rule.
6, 9, 12, 15, 18
6, +, 3, =, =, =, =

Complete the pattern. Use your 🖩 .

+2

① 7, 9, ______, 13, ______, ______, ______, ______, ______
Rule: ______

+5

② 5, ______, ______, 20, 25, ______, ______, ______, ______
Rule: ______

③ 10, ______, ______, ______, 26, 30, ______, ______, ______
Rule: ______

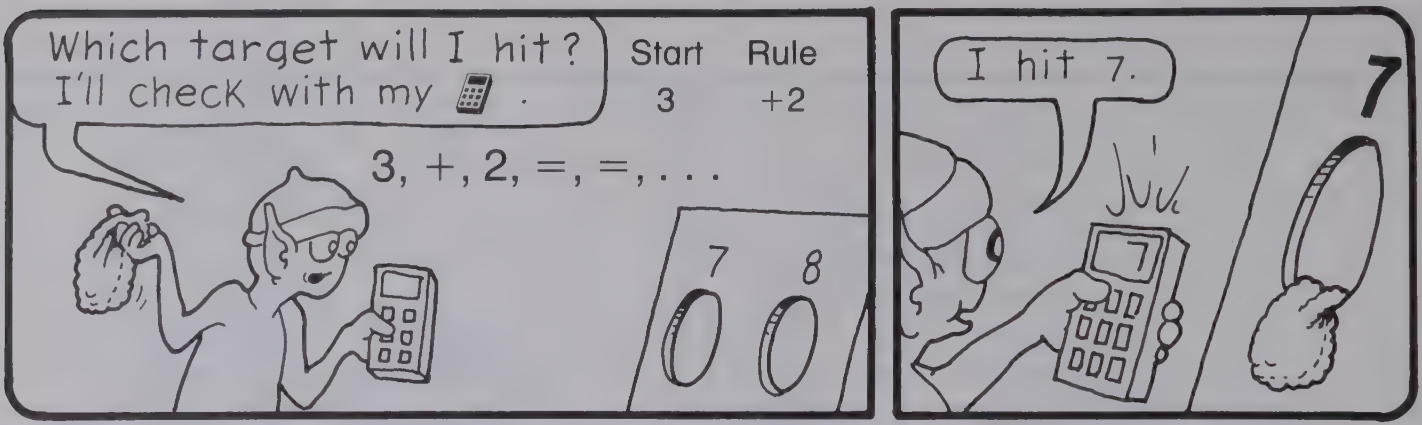
④ 4, ______, 8, 10, ______, ______, ______, ______, ______
Rule: ______

⑤ 3, ______, 9, 12, ______, ______, 21, ______, ______
Rule: ______

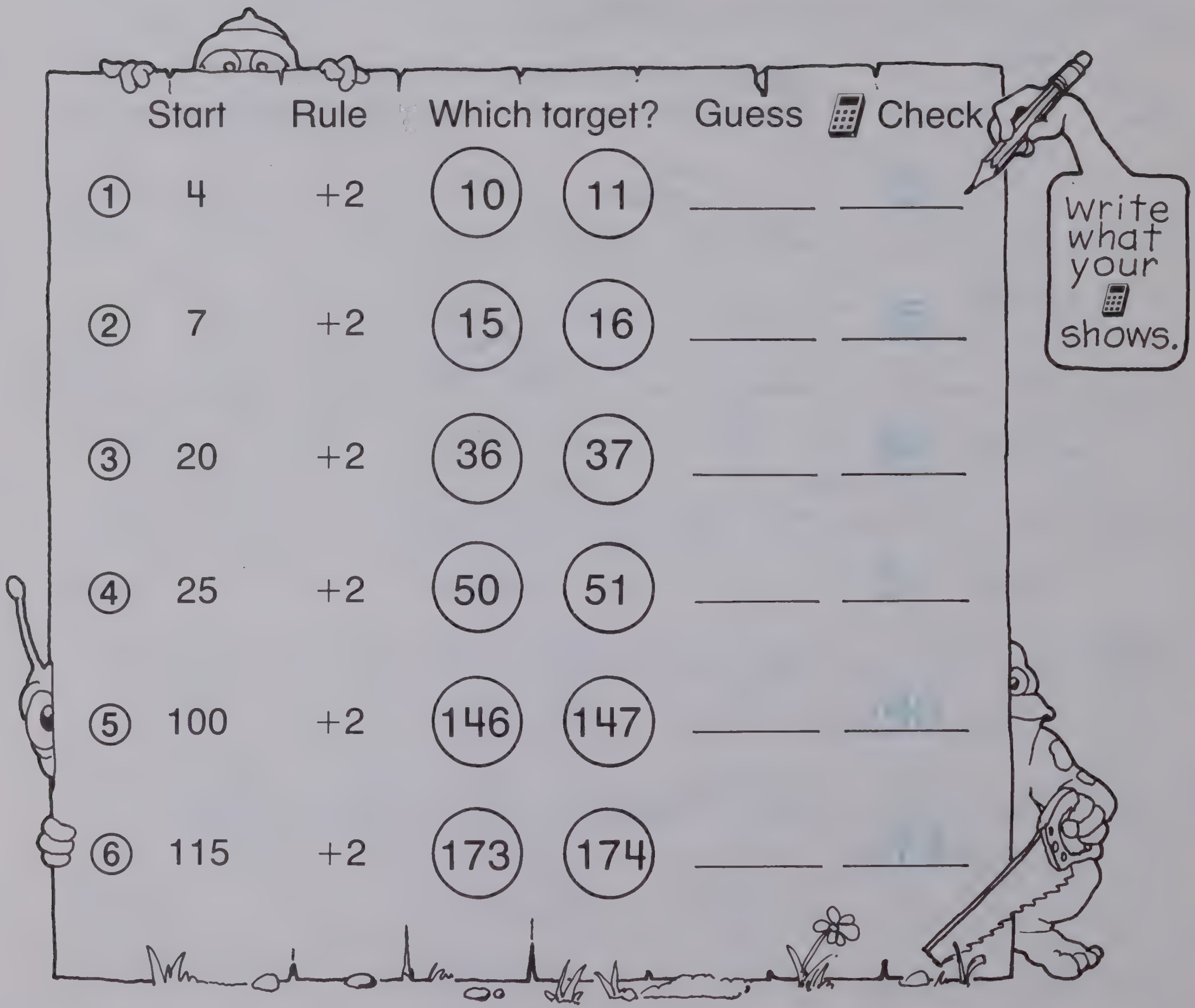
⑥ 75, ______, ______, 90, 95, ______, ______, ______
Rule: ______

Two's Target

Name ______________________


Which target will I hit? I'll check with my 🖩.
Start Rule
3 +2
3, +, 2, =, =, . . .
7 8
I hit 7.
7

Which target will you hit?


Write what your 🖩 shows.

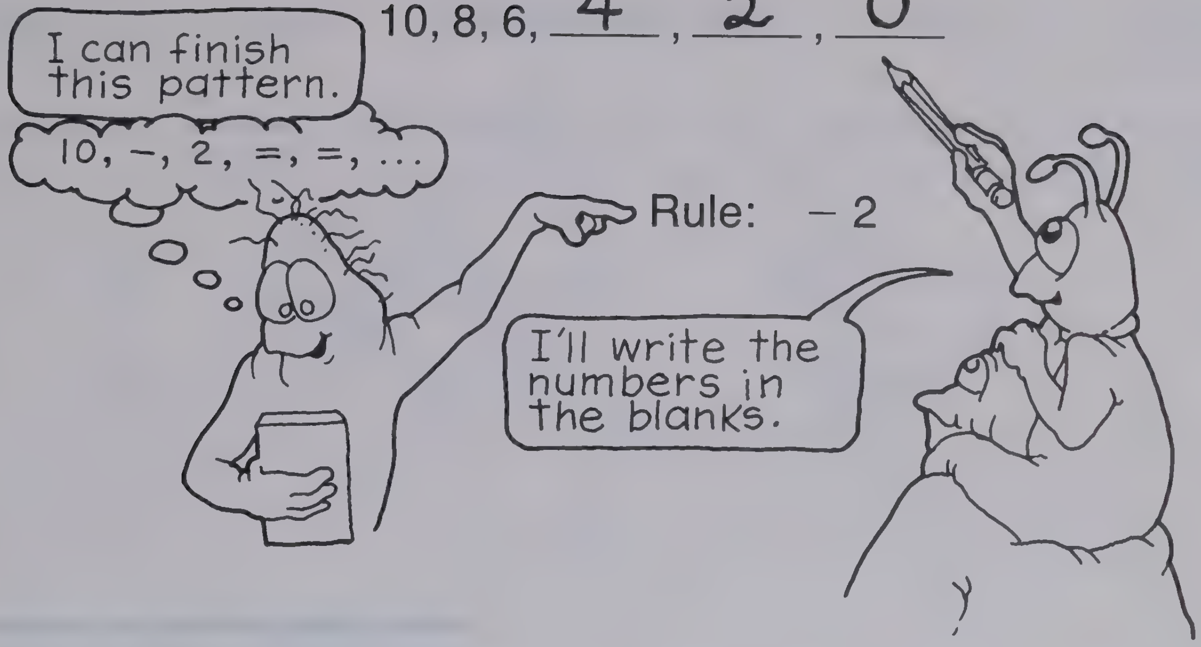
	Start	Rule	Which target?		Guess	🖩 Check
①	4	+2	10	11	______	______
②	7	+2	15	16	______	______
③	20	+2	36	37	______	______
④	25	+2	50	51	______	______
⑤	100	+2	146	147	______	______
⑥	115	+2	173	174	______	______

Counting Back
Patterns
Problem Solving

Back to Patterns

Name ____________________

10, 8, 6, 4, 2, 0


I can finish this pattern.
10, –, 2, =, =, ...
I'll write the numbers in the blanks.

Rule: – 2

① 14, 12, 10, ______, ______, ______, ______

Rule: – 2

② 15, 13, 11, ______, ______, ______, ______

Rule: – 2

③ 18, 15, 12, ______, ______, ______, ______

Rule: – 3

Find the rule. Then complete the pattern.

④ 24, 20, 16, ______, ______, ______, ______

Rule: ______

⑤ 19, 16, 13, ______, ______, ______, ______

Rule: ______

⑥ 25, 21, 17, ______, ______, ______, ______

Rule: ______

Patterns
Counting Back
Problem Solving

What a Match!

Name ____________________

Draw a line from each rule to its pattern.
Complete the pattern.

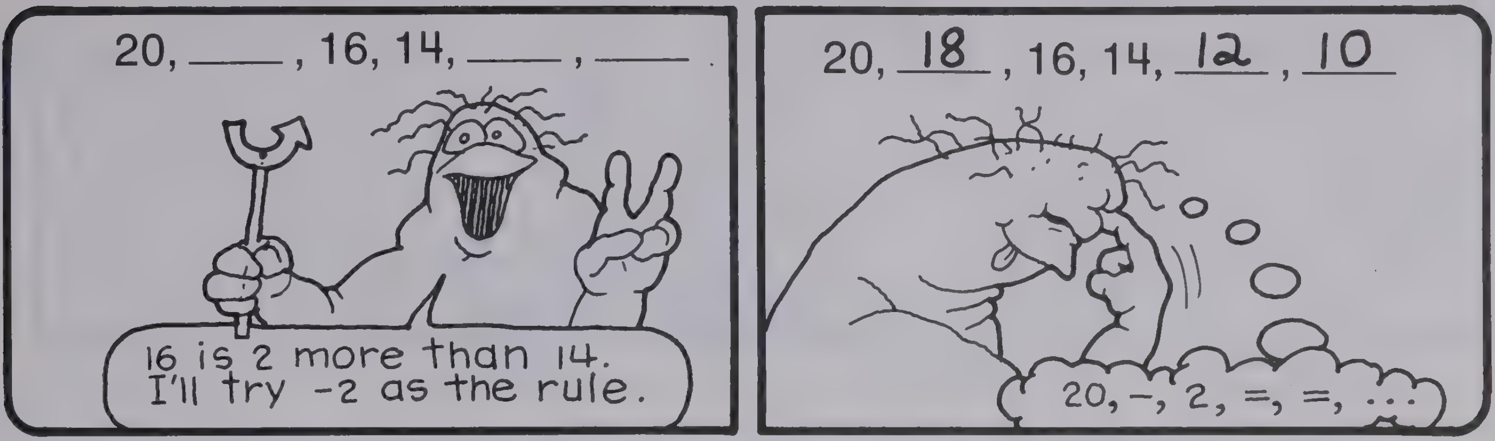
Rule	Pattern
−2	20, 17, 14, ______ , ______ , ______
−3	20, 15, 10, ______ , ______ , ______
−4	20, 10, 0, ______ , ______ , ______
−5	20, 18, 16, 14 , 12 , ______
−10	20, 16, 12, ______ , ______ , ______

Rule	Pattern
−2	100, 96, 92, ______ , ______ , ______
−3	100, 90, 80, ______ , ______ , ______
−4	100, 98, 96, ______ , ______ , ______
−5	100, 95, 90, ______ , ______ , ______
−10	100, 80, 60, ______ , ______ , ______
−20	100, 97, 94, ______ , ______ , ______

Patterns
Counting Back
Problem Solving

What's My Rule?

Name ____________________


20, ____, 16, 14, ____, ____.
16 is 2 more than 14. I'll try -2 as the rule.
20, 18, 16, 14, 12, 10
20, –, 2, =, =, . . .

Complete the patterns. Use your 🖩.

① 25, $\xrightarrow{-2}$ 23, ________, 19, ________, ________, ________
Rule: ________

② 35, ________, 29, $\xrightarrow{-3}$ 26, ________, ________, ________
Rule: ________

③ 50, ________, ________, ________, ________, 25, $\rightarrow$ 20
Rule: ________

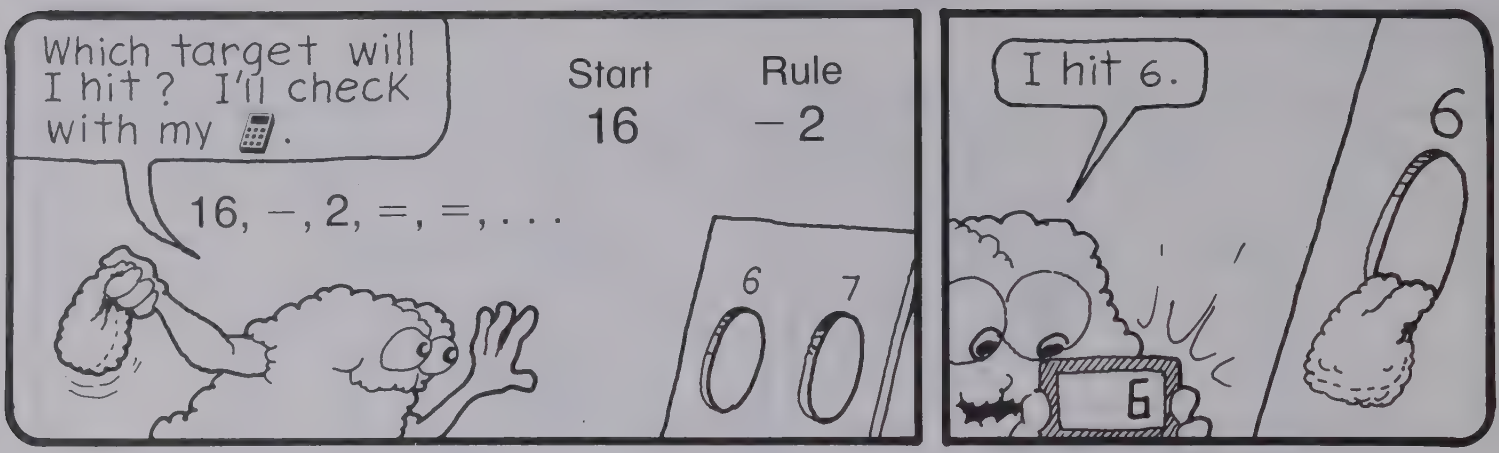
④ 75, ________, ________, ________, 35, $\rightarrow$ 25, ________
Rule: ________

⑤ 100, ________, 80, 70, 60, ________, ________
Rule: ________

⑥ 100, ________, ________, 85, 80, ________, ________
Rule: ________

Which One?

Name ____________________


Which target will I hit? I'll check with my 🖩.
Start 16
Rule − 2
16, −, 2, =, =, . . .
6
7
I hit 6.
6
6

Which target will you hit?

	Start	Rule	Which Target?		Guess	🖩 Check
①	12	−2	4	5	______	______
②	15	−2	3	4	______	______
③	20	−2	9	10	______	______
④	23	−2	11	12	______	______
⑤	50	−2	19	20	______	______
⑥	155	−2	131	132	______	______

Patterns
Skip Counting
Problem Solving

Rule Rally

Name ____________

Find each rule. Use your 🖩 to complete the pattern.

$\xrightarrow{+4}$

① 5, 9, 13, 17, ________ , ________ , ________

Rule: +4

$\xrightarrow{\quad}$

② 80, 70, 60, 50, ________ , ________ , ________

Rule: ________

$\xrightarrow{\quad}$

③ 9, 18, 27, 36, ________ , ________ , ________

Rule: ________

$\xrightarrow{\quad}$

④ 64, 56, 48, 40, ________ , ________ , ________

Rule: ________

⑤ 14, 31, 48, 65, ________ , ________ , ________

Rule: ________

⑥ 42, 35, 28, 21, ________ , ________ , ________

Rule: ________

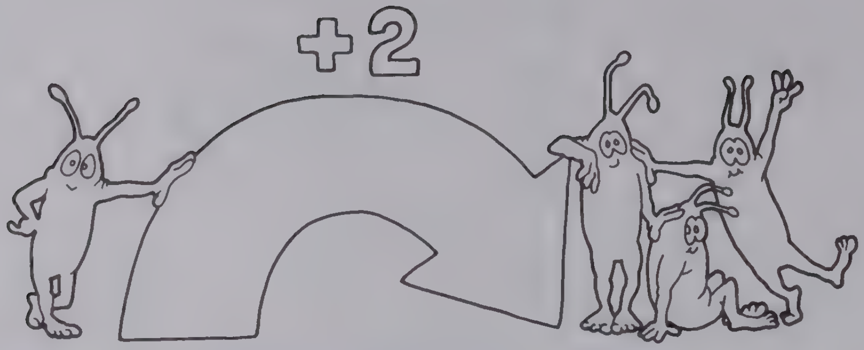
⑦ 99, 198, 297, 396, ________ , ________ , ________

Rule: ________

Patterns
Skip Counting
Problem Solving

Rule Roll

Name ____________________



Find each rule. Use your 🖩 to complete the pattern.

① 6, ________ , $\overset{\xrightarrow{+2}}{10,\ 12}$, ________ , ________ , 18
Rule: +2

② 15, ________ , 25, ________ , ________ , $\overset{\rightarrow}{40,\ 45}$
Rule: ________

③ 40, ________ , ________ , ________ , $\overset{\rightarrow}{20,\ 15}$, ________
Rule: ________

④ 27, ________ , 21, 18, ________ , ________ , ________
Rule: ________

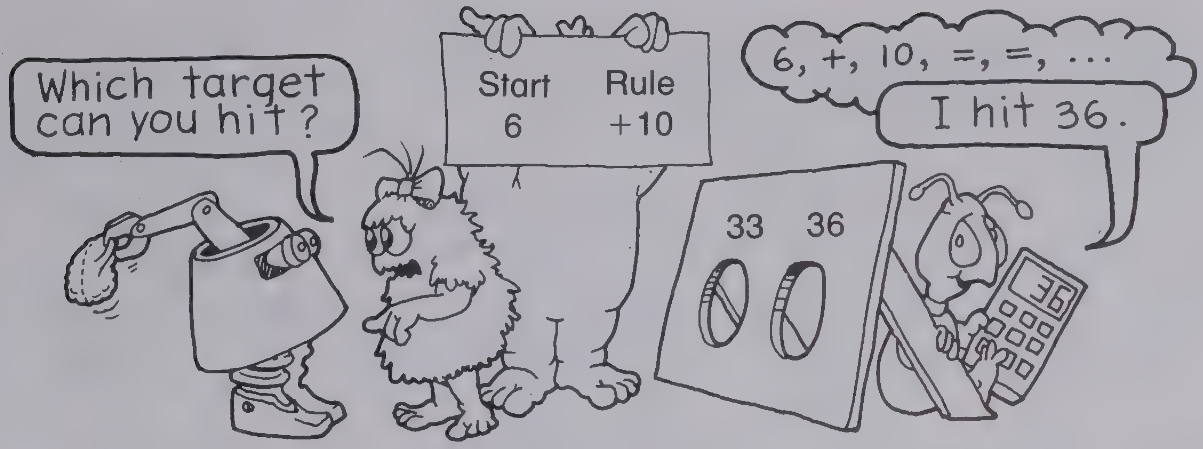
⑤ 21, 31, ________ , ________ , ________ , 71, ________
Rule: ________

⑥ 0, ________ , ________ , ________ , 16, 20, ________
Rule: ________

⑦ 18, ________ , 12, 9, ________ , ________ , ________
Rule: ________

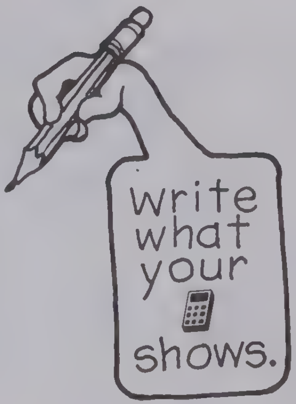
Target Tens

Name ____________________



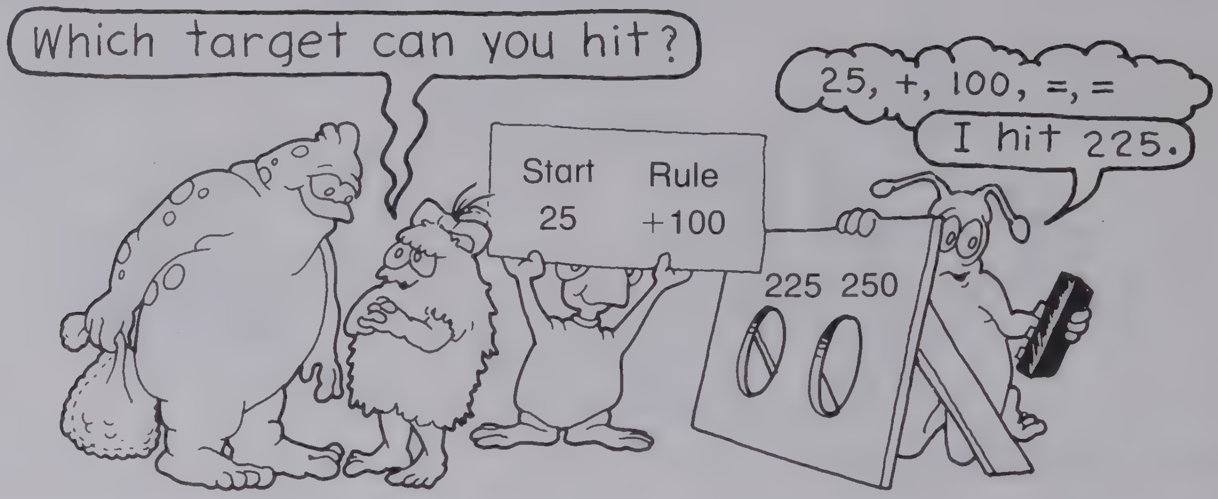
Which target will you hit?

	Start	Rule	Which target?		Guess	🖩 Check
①	4	+10	20	24	______	______
②	8	+10	36	38	______	______
③	16	+10	36	40	______	______
④	25	+10	50	55	______	______
⑤	30	+10	130	103	______	______
⑥	86	+10	126	130	______	______
⑦	100	+10	195	200	______	______
⑧	110	+10	151	150	______	______


Write what your 🖩 shows.

Hunting Hundreds

Name ______________________



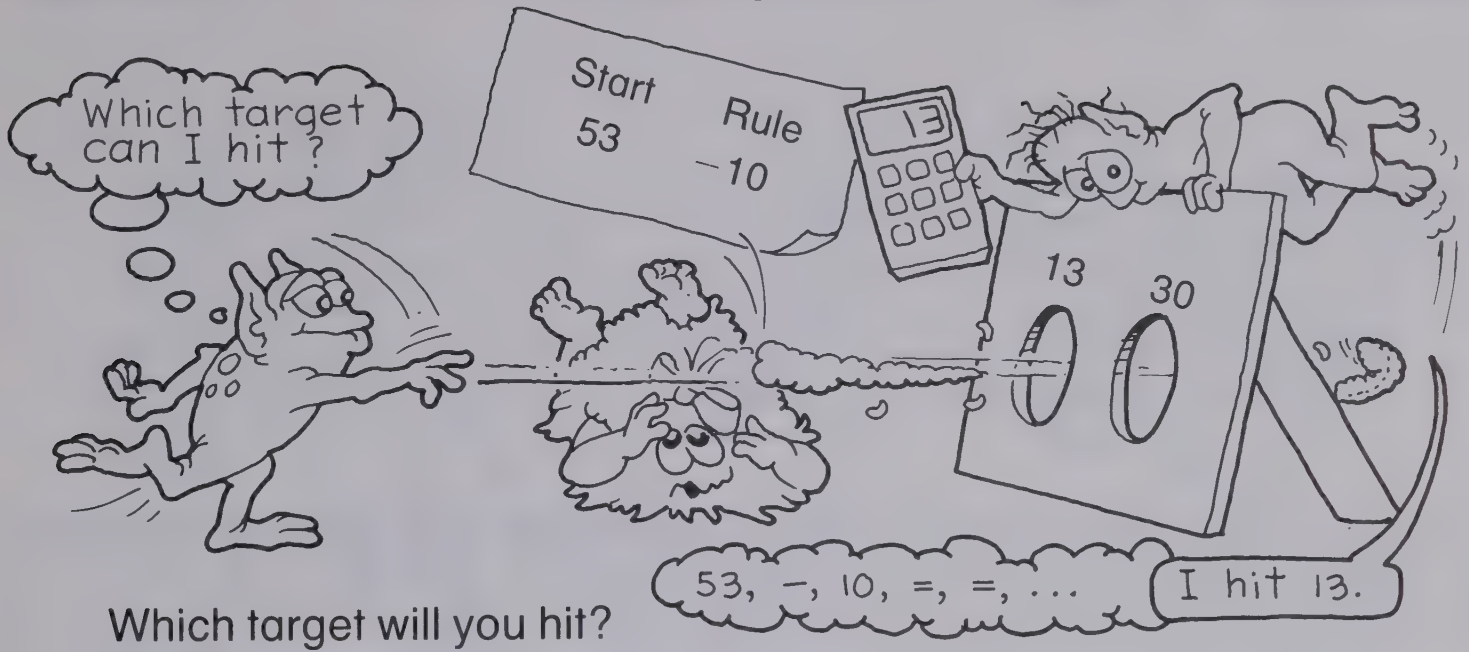
Which target will you hit?

	Start	Rule	Which target?		Guess	Check
①	20	+100	200	220	____	____
②	35	+100	335	500	____	____
③	41	+100	410	441	____	____
④	86	+100	586	580	____	____
⑤	97	+100	897	970	____	____
⑥	169	+100	469	696	____	____
⑦	123	+100	321	323	____	____

Write what your 🖩 shows.

Taking Tens

Name ____________________



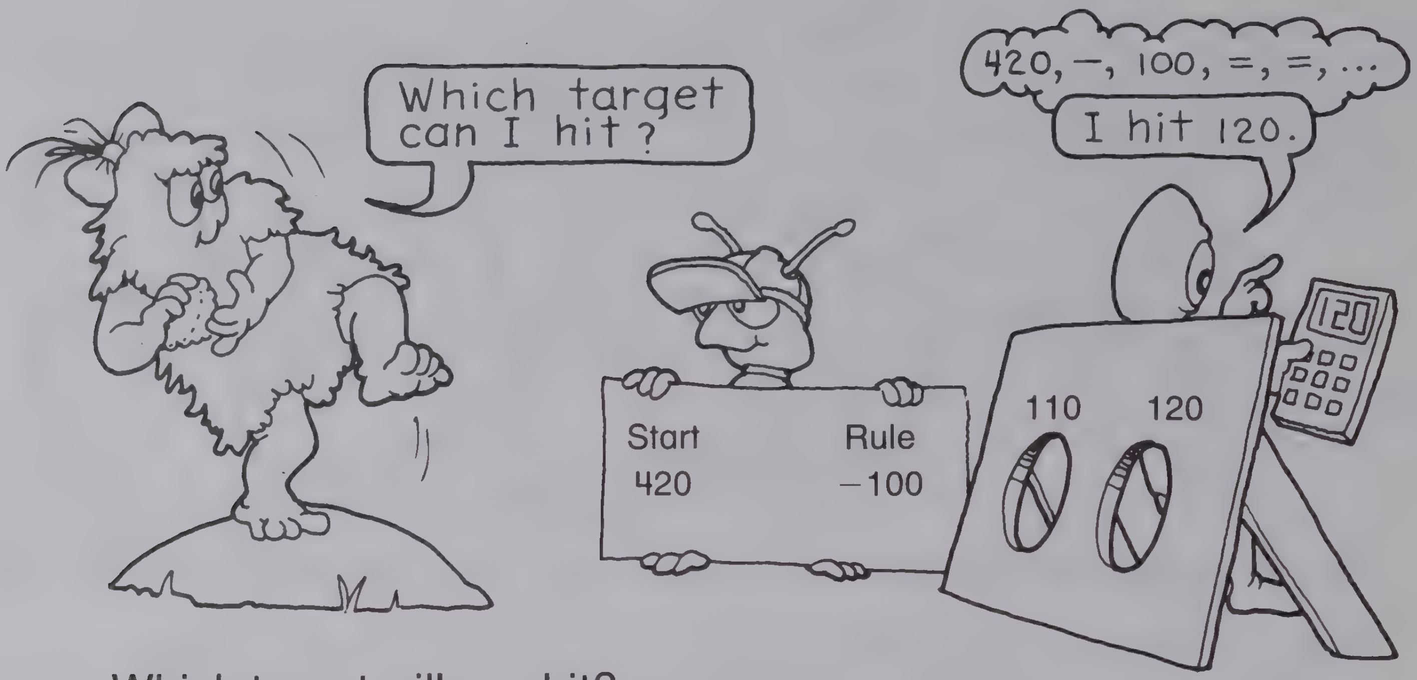
Which target will you hit?

	Start	Rule	Which target?		Guess 🖩	Check
①	53	−10	13	30	____	____
②	33	−10	30	23	____	____
③	27	−10	7	26	____	____
④	81	−10	11	18	____	____
⑤	76	−10	17	36	____	____
⑥	50	−10	20	5	____	____
⑦	35	−10	30	5	____	____
⑧	84	−10	24	10	____	____

Write what your 🖩 shows.

Hundreds' Hunch

Name ____________________



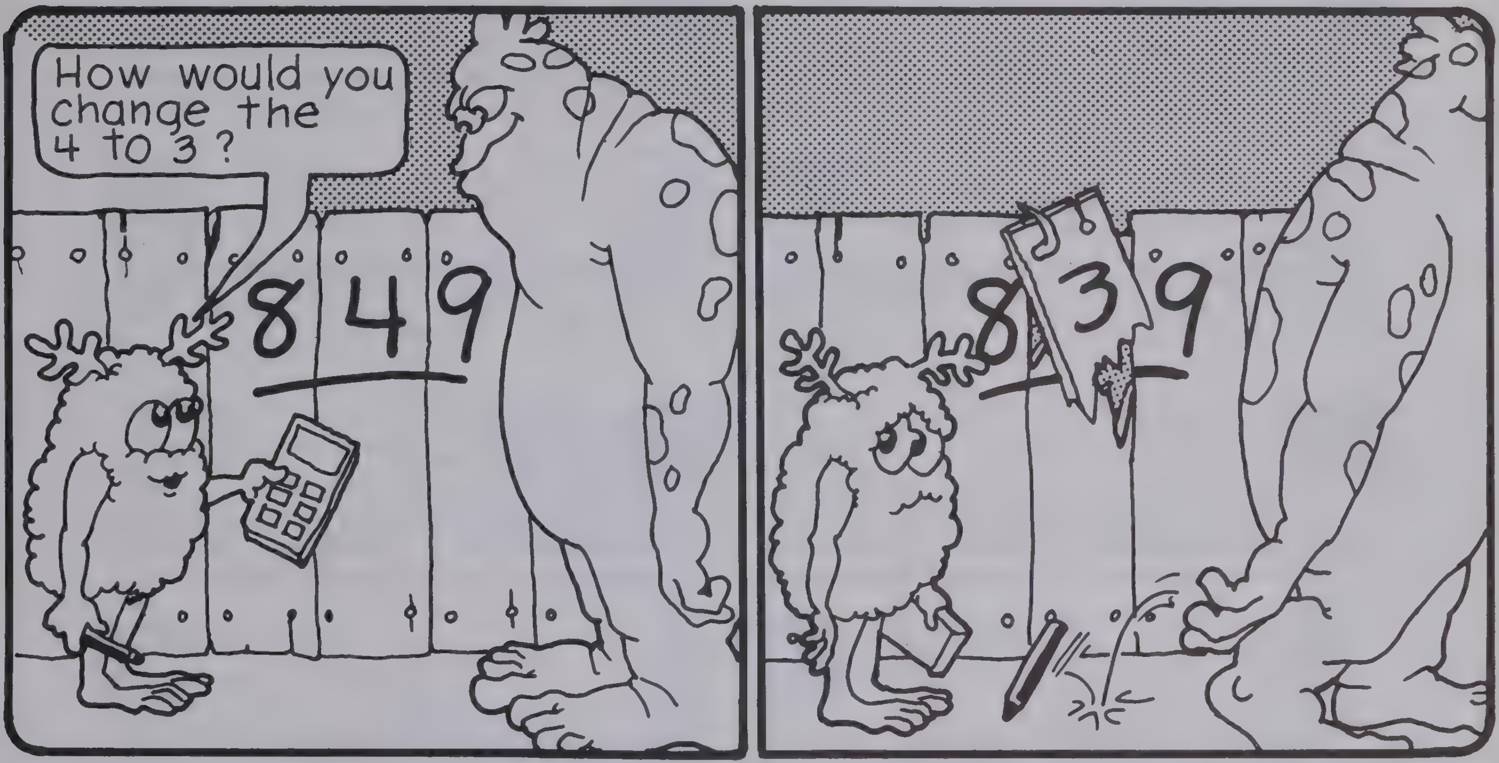
Which target will you hit?

	Start	Rule	Which target?		Guess	🖩 Check
①	429	−100	229	290	______	______
②	364	−100	163	164	______	______
③	590	−100	295	290	______	______
④	605	−100	105	506	______	______
⑤	741	−100	417	441	______	______
⑥	1200	−100	210	1000	______	______
⑦	1443	−100	443	144	______	______

Write what your 🖩 shows.

Place Value and Problem Solving

One of the best ways to test your students' understanding of a concept is to ask them to apply their knowledge creatively to new and unusual situations. Problem solving gives students this kind of opportunity, and it is often the best way to reinforce concepts and skills. The activities in this section give students the chance to use their understanding of place value concepts to solve problems. At the same time, they develop problem solving strategies that will be invaluable to them throughout their education.

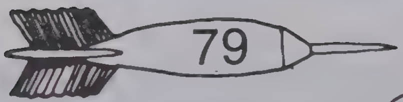

How would you change the 4 to 3?
849
839

The activities in this section use similar formats: a starting number is entered in the calculator and students are directed to change one of the digits through addition or subtraction. After entering 849, for example, students may be instructed to change the 4 to a 3. Different problem solving strategies may develop, but students will have to ask certain questions before coming up with an effective strategy—What is the place value of the digit that I want to change? Do I add or subtract? What numbers could I try? In the above example, students might reason that the tens' digit needs to be "less," so they may try subtracting various numbers. After some practice, students will be able to reason that 10 is the number to subtract.

The value of these activities lies in the discussions that will evolve as different strategies are tested. It is important that you elicit from your students the various techniques that they are using, and that you direct their creative thought. With careful supervision, these activities will provide a good foundation for more difficult problem solving.

Finding the Right Place

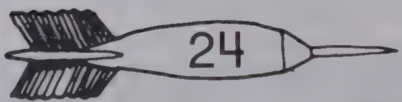
Name ____________________



59

①

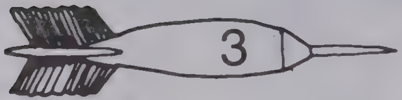
	hundreds	[✓ tens]	ones
+	0	2	0
[✓ −]			



4

②

	hundreds	tens	ones
+			
−			



63

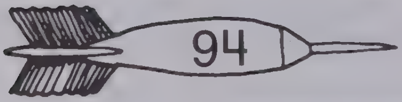
③

	hundreds	tens	ones
+			
−			

402

④

	hundreds	tens	ones
+			
−			



794

⑤

	hundreds	tens	ones
+			
−			

634

⑥

	hundreds	tens	ones
+			
−			

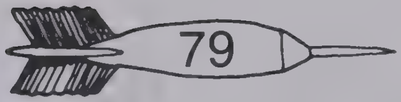
Number Tricks

Name ______________________

39

①

	hundreds	tens	ones
[✓ +]	0	0	3
−			



71

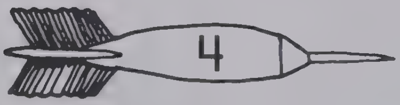
②

	hundreds	tens	ones
+			
−			

74

③

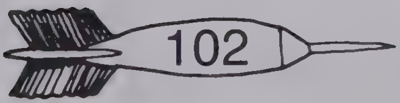
	hundreds	tens	ones
+			
−			



204

④

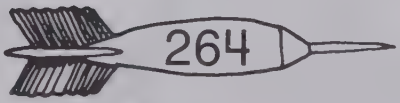
	hundreds	tens	ones
+			
−			



702

⑤

	hundreds	tens	ones
+			
−			



294

⑥

	hundreds	tens	ones
+			
−			

183

⑦

	hundreds	tens	ones
+			
−			

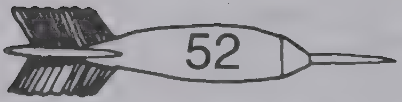
307

⑧

	hundreds	tens	ones
+			
−			

Digit Digest

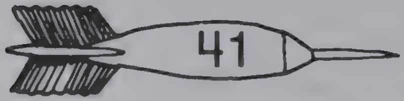
Name ____________________



32

①

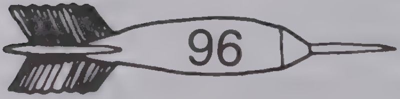
	hundreds	tens	ones
+ [✓ −]	0	2	0



71

②

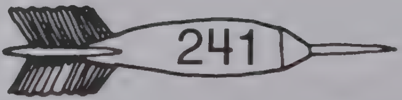
	hundreds	tens	ones
+ −			



92

③

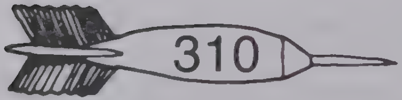
	hundreds	tens	ones
+ −			



201

④

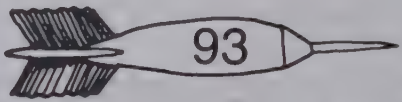
	hundreds	tens	ones
+ −			



316

⑤

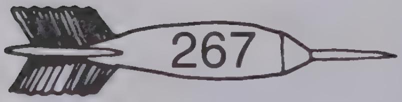
	hundreds	tens	ones
+ −			



893

⑥

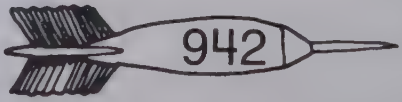
	hundreds	tens	ones
+ −			



467

⑦

	hundreds	tens	ones
+ −			



902

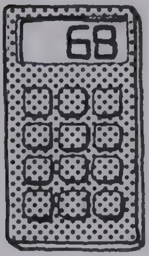
⑧

	hundreds	tens	ones
+ −			

Place Value
Subtraction
Problem Solving

Digit Disguise

Name ____________________

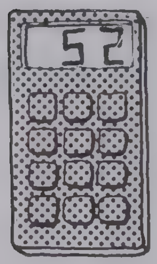
Enter	Change to 0.	Press			🖩 Answer
	8	−	8	=	60

	Enter	Change to 0	Press			🖩 Answer
①	47	7	−	7	=	40
②	81	1				
③	24	4				
④	138	3				
⑤	389	8				
⑥	206	6				

Place Value
Subtraction
Problem Solving

Netting Numbers

Name ______________________

Enter	Change	Press			Answer
	5 to 3	−	20	=	32

Students enter a start number, then look under the *Change* column to see which digit to change. In the example above, the 5 should be changed to a 3. To accomplish this, students must first determine the place value of 5, the number that needs to be subtracted, and the proper keying sequence.

This page may be used as a teacher-directed activity, with students suggesting numbers to subtract. Such a trial-and-error approach will help students recognize the importance of place value.

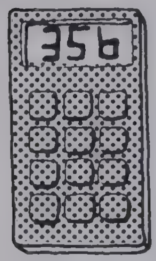
	Enter	Change	Press			Answer
①	73	7 to 5	−	20	=	
②	86	8 to 1				
③	45	5 to 2				
④	51	1 to 0				
⑤	780	7 to 5				
⑥	973	7 to 0				

Place Value
Addition
Problem Solving

Numeral Magic

Name ____________________

Enter	Change	Press			Answer
	5 to 9	+	40	=	396



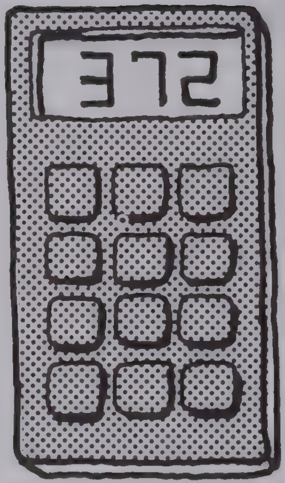
	Enter	Change	Press			Answer
①	64	6 to 8	+	20	=	
②	64	4 to 9				
③	21	2 to 6				
④	347	3 to 7				
⑤	347	4 to 8				
⑥	785	7 to 9				

Place Value
Addition and Subtraction
Problem Solving

More or Less

Name ____________________

To make a digit more, I add.



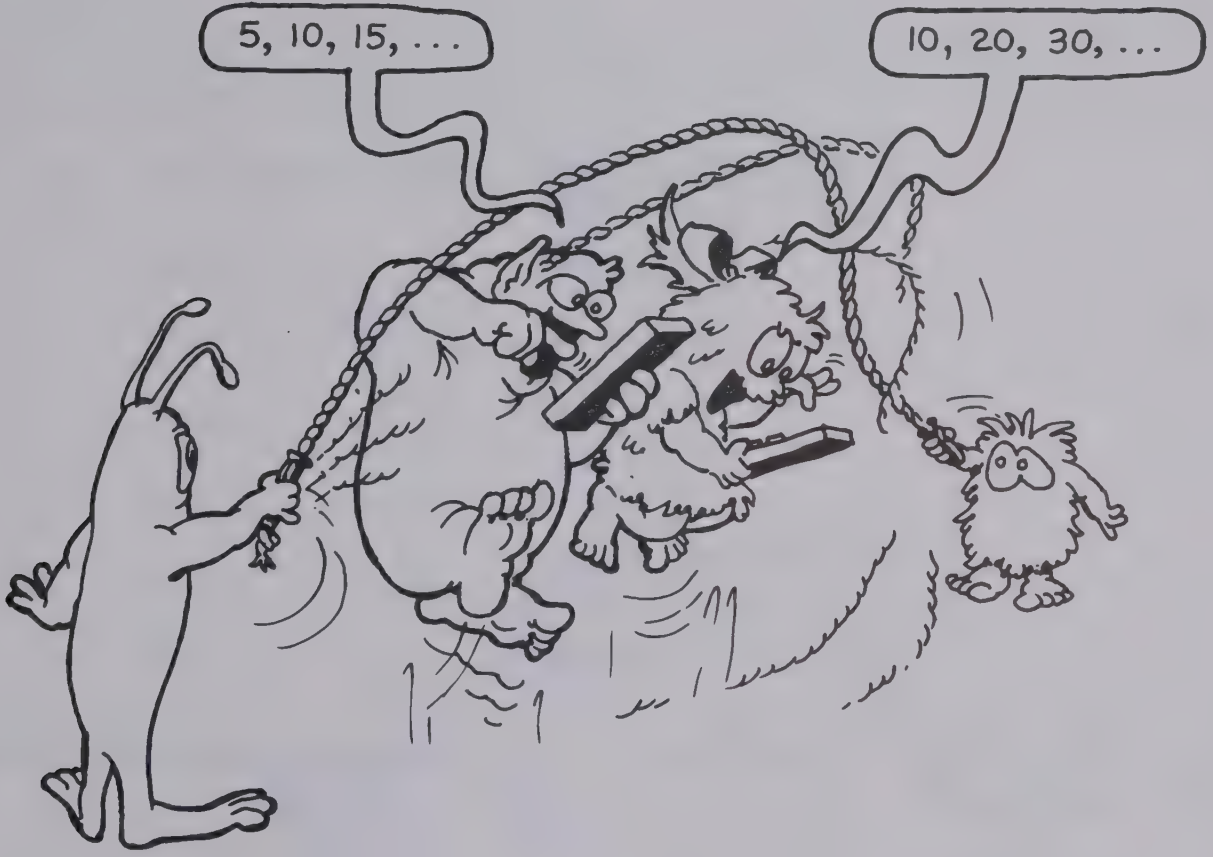
To make a digit less, I subtract.

	Enter	Change	Press			Answer
①	14	1 to 9	+	80	=	
②	56	5 to 2				
③	73	3 to 8				
④	73	7 to 4				
⑤	145	4 to 3				
⑥	145	1 to 5				

Skip Counting

Students will find that the following activities require an understanding of the calculator, an understanding of place value, and some problem solving strategies.

Since students will be using their calculators to skip count, it is important that they understand what is happening as they count. When counting by fives, for example, the student will enter + 5 = = = . . . ; it is essential that he realize that each time he presses ⊜ , another five is added. Page 48 provides not only practice in skip counting, preparing students for other related activities in this section, but also provides readiness for developing multiplication through repeated addition.

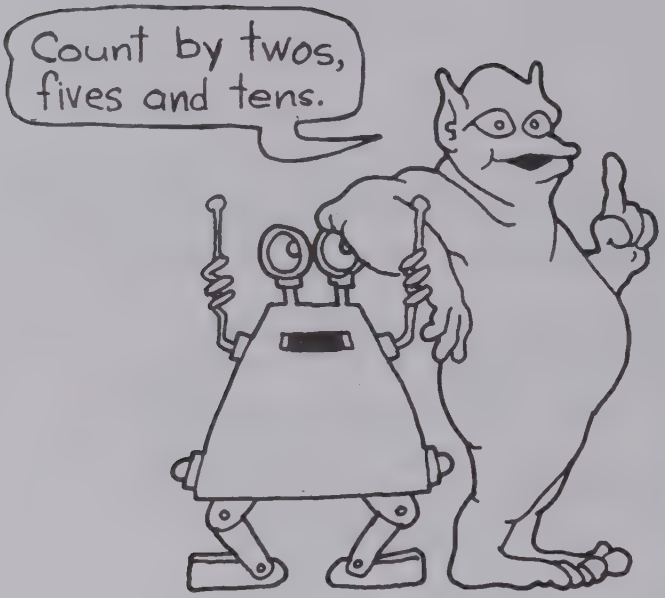


The activities that involve skip counting by tens or by hundreds place an extra emphasis on place value. Students should be aware of what digit, or digits, change as ⊜ is pressed.

Some of the pages offer additional challenge in that the student is required to guess the answer first, then find the answer on the calculator. All of the activities, however, can be extended or altered to suit the individual needs and abilities of your students.

Skip Counting

Name ____________________


Count by twos, fives and tens.

How many times do you press ⊜ ?

Enter + 2	What number on the 🖩 ?	Count the ⊜
=	2	1
=	4	2
=		
=		
=		

I counted by 2s .

I pressed ⊜ 5 times

and got ____ on my 🖩 .

Enter + 5	What number on the 🖩 ?	Count the ⊜
=	5	1
=		
=		
=		
=		

I counted by ____ .

I pressed ⊜ ____ times

and got ____ on my 🖩 .

Enter +10	What number on the 🖩 ?	Count the ⊜
=		
=		
=		
=		
=		

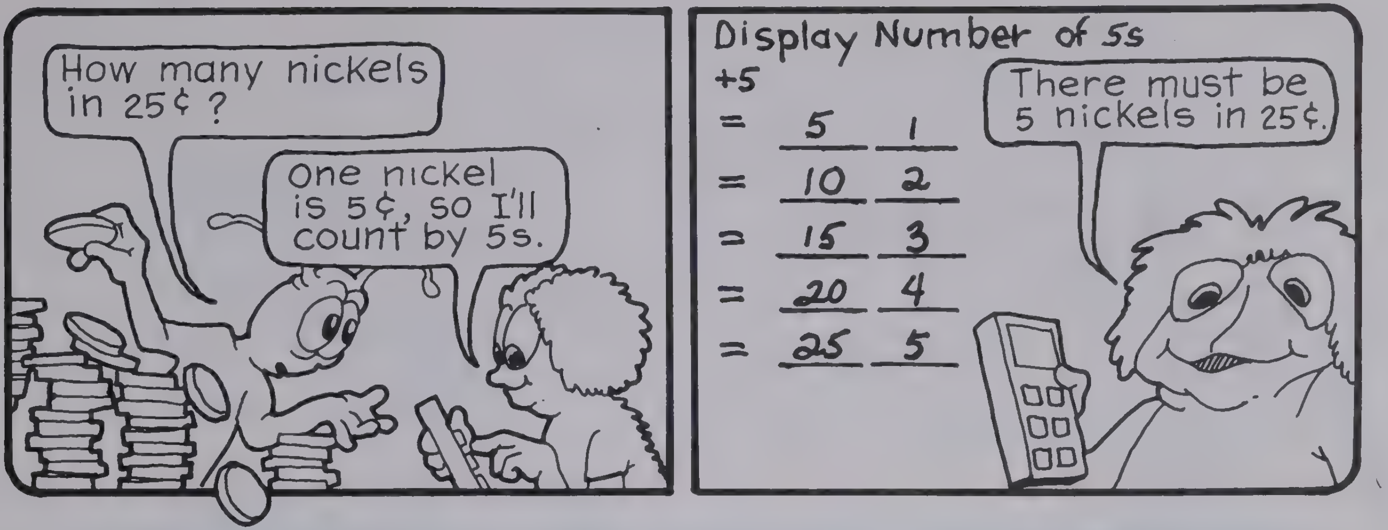
I counted by ____ .

I pressed ⊜ ____ times

and got ____ on my 🖩 .

Coin Count

Name ____________________


How many nickels in 25¢ ?
One nickel is 5¢, so I'll count by 5s.
Display Number of 5s
+5
= 5 1
= 10 2
= 15 3
= 20 4
= 25 5
There must be 5 nickels in 25¢.

How many nickels in

10¢ ________ nickels

35¢ ________ nickels

100¢ ________ nickels

135¢ ________ nickels

95¢ ________ nickels

105¢ ________ nickels

45¢ ________ nickels

How many quarters in

50¢ ________ quarters

125¢ ________ quarters

175¢ ________ quarters

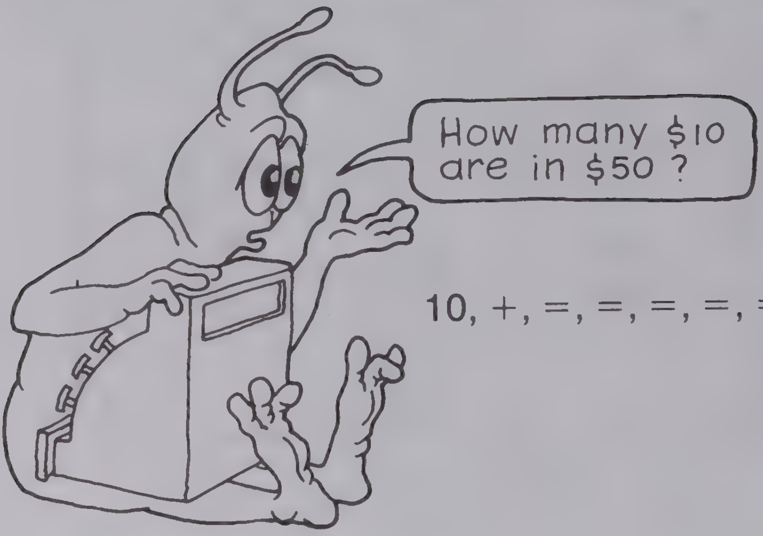
300¢ ________ quarters

400¢ ________ quarters

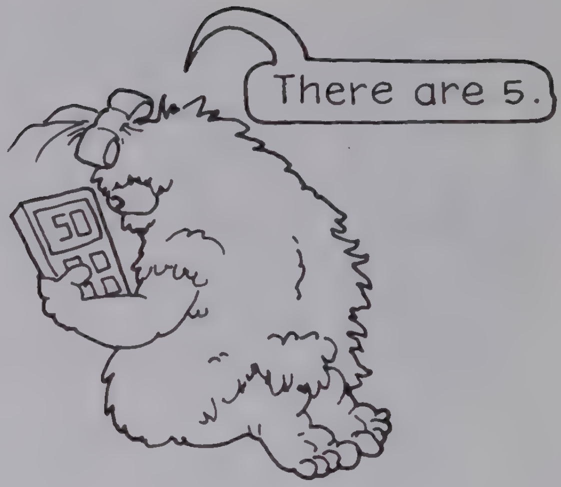
500¢ ________ quarters

Money Madness

Name ______________________



10, +, =, =, =, =, =

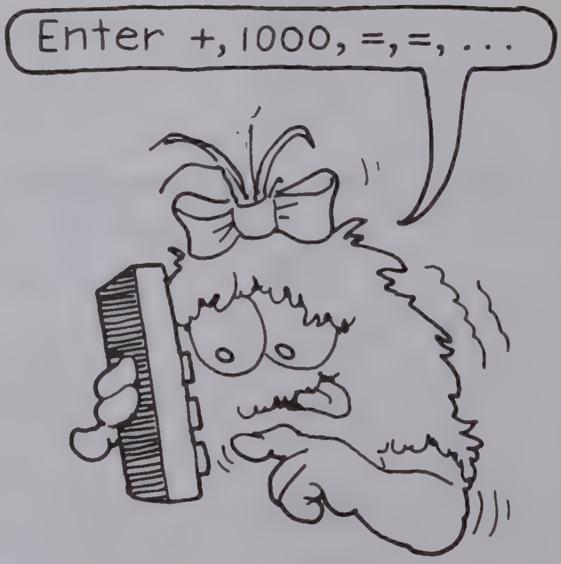


How many $10 in

$40 ________
$60 ________
$100 ________
$70 ________
$200 ________

Can you answer these without your 🖩 ?

How many $10 in 900? ________
How many $10 in $1000? ________



How many $1000 in

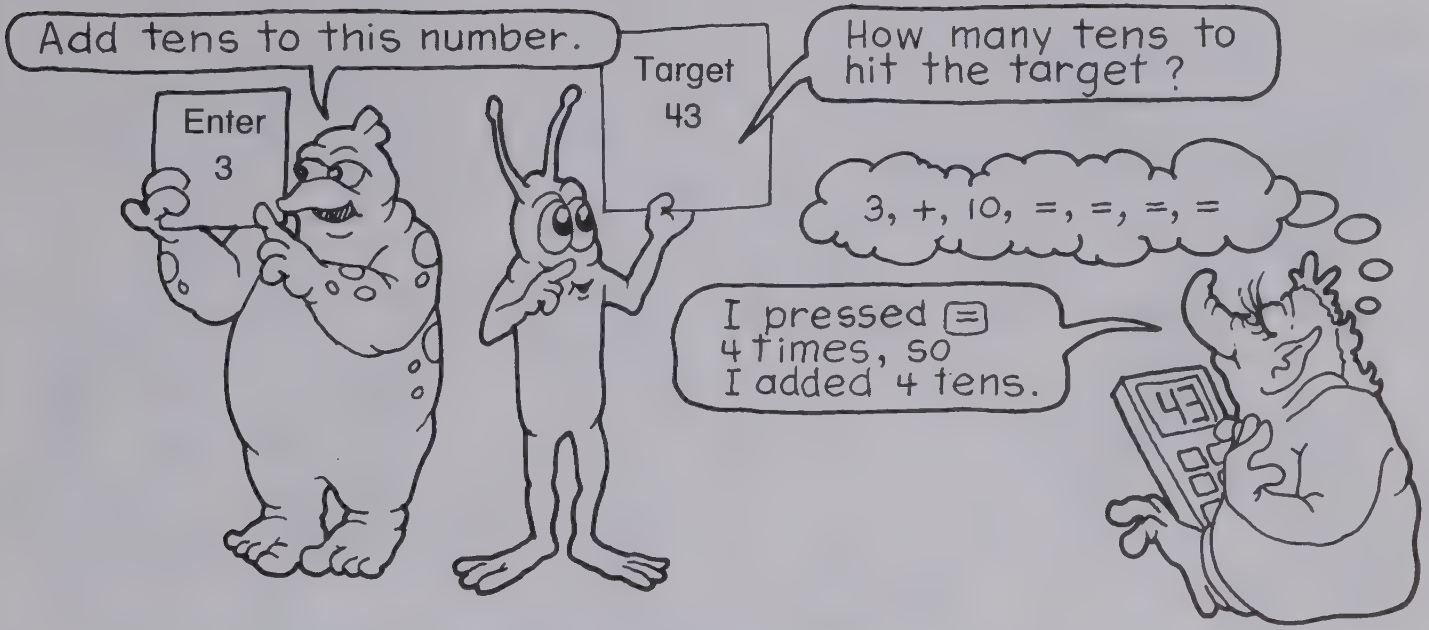
$2000 ________
$3000 ________
$5000 ________
$10,000 ________
$15,000 ________

Try these without your 🖩 .

How many $1000 in $100,000? ________
How many $1000 in $200,000? ________

Skipping by Tens

Name ____________________

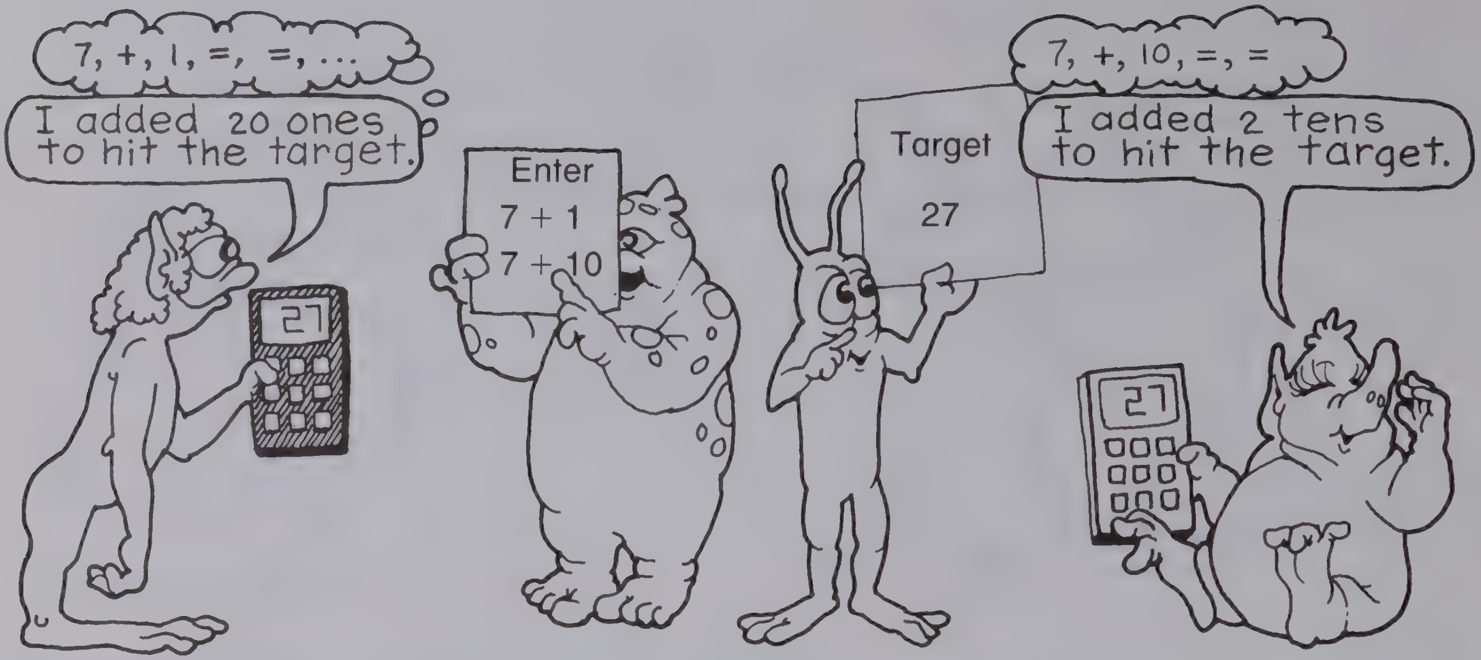

Add tens to this number.
Enter 3
Target 43
How many tens to hit the target?
3, +, 10, =, =, =, =
I pressed = 4 times, so I added 4 tens.
43

How many tens will you add to hit the target?

	Enter	Target	How many tens?	
			Guess	🖩 Check
①	3	43	______	______
②	5	25	______	______
③	10	50	______	______
④	12	32	______	______
⑤	15	65	______	______
⑥	50	100	______	______
⑦	100	140	______	______
⑧	100	200	______	______

Ones to Tens

Name ________________

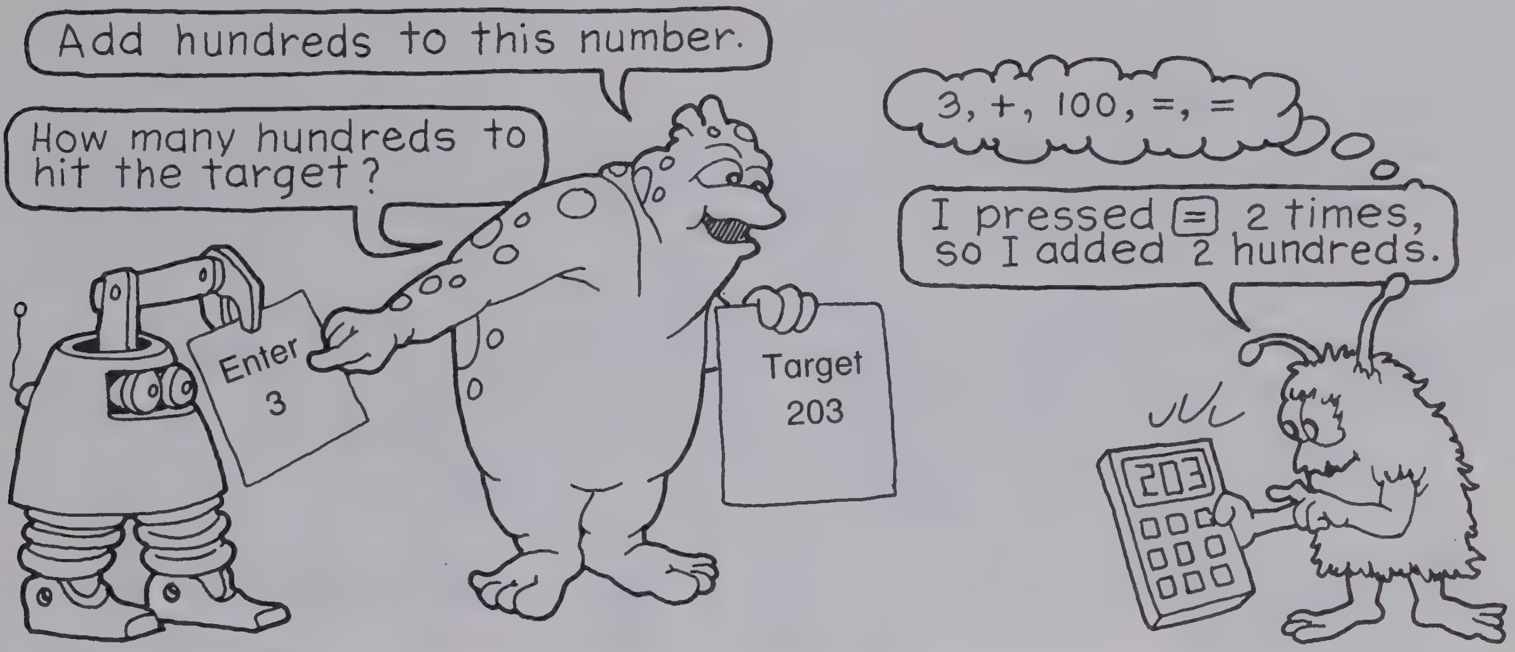

7, +, 1, =, =, ...
I added 20 ones to hit the target.
27
Enter
7 + 1
7 + 10
Target
27
7, +, 10, =, =
I added 2 tens to hit the target.
27

How many ones will you add to hit the target?
How many tens?

	Enter	Target		Guess	🖩 Check
①	6 + 1	26	How many ones?	______	______
	6 + 10		How many tens?	______	______
②	18 + 1	58	How many ones?	______	______
	18 + 10		How many tens?	______	______
③	20 + 1	80	How many ones?	______	______
	20 + 10		How many tens?	______	______
④	100 + 1	200	How many ones?	______	______
	100 + 10		How many tens?	______	______
⑤	83 + 1	103	How many ones?	______	______
	83 + 10		How many tens?	______	______

How Many Hundreds?

Name ____________________

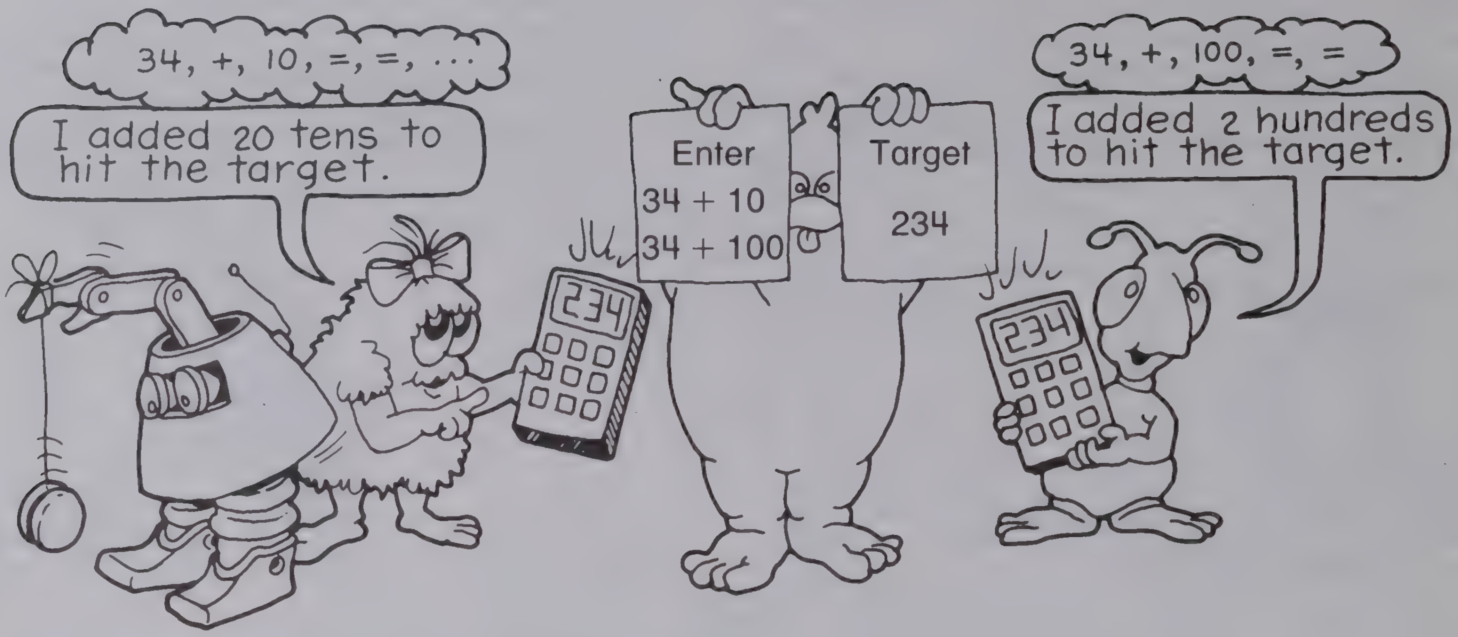

Add hundreds to this number.
How many hundreds to hit the target?
Enter 3
Target 203
3, +, 100, =, =
I pressed = 2 times, so I added 2 hundreds.
203

How many hundreds will you add to hit the target?

	Enter	Target	How many hundreds? Guess	 Check
①	8	308	______	______
②	23	523	______	______
③	49	649	______	______
④	54	554	______	______
⑤	98	898	______	______
⑥	125	725	______	______
⑦	300	900	______	______
⑧	222	422	______	______

Tens to Hundreds

Name ______________

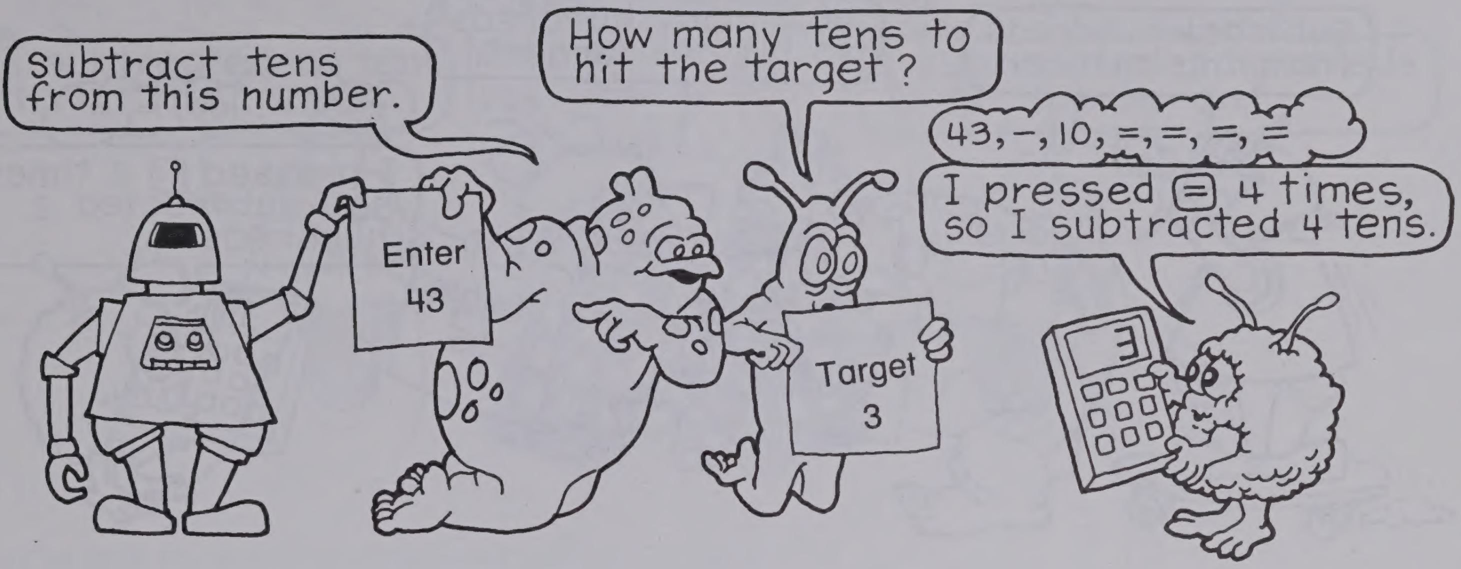

34, +, 10, =, =, . . .
I added 20 tens to hit the target.
Enter
34 + 10
34 + 100
Target
234
234
234
34, +, 100, =, =
I added 2 hundreds to hit the target.

How many tens will you add to hit the target?
How many hundreds?

	Enter	Target		Guess	Check
①	42 + 10	242	How many tens?	______	______
	42 + 100		How many hundreds?	______	______
②	12 + 10	212	How many tens?	______	______
	12 + 100		How many hundreds?	______	______
③	25 + 10	225	How many tens?	______	______
	25 + 100		How many hundreds?	______	______
④	42 + 10	342	How many tens?	______	______
	42 + 100		How many hundreds?	______	______
⑤	150 + 10	450	How many tens?	______	______
	150 + 100		How many hundreds?	______	______

Tens Total

Name ____________


Subtract tens from this number.
Enter 43
How many tens to hit the target?
Target 3
43, −, 10, =, =, =, =
I pressed = 4 times, so I subtracted 4 tens.
3

Since students will be subtracting tens from each number below, the *Enter* number is always followed by − 10 = = = ... Students should record their guesses before using their calculators to check.

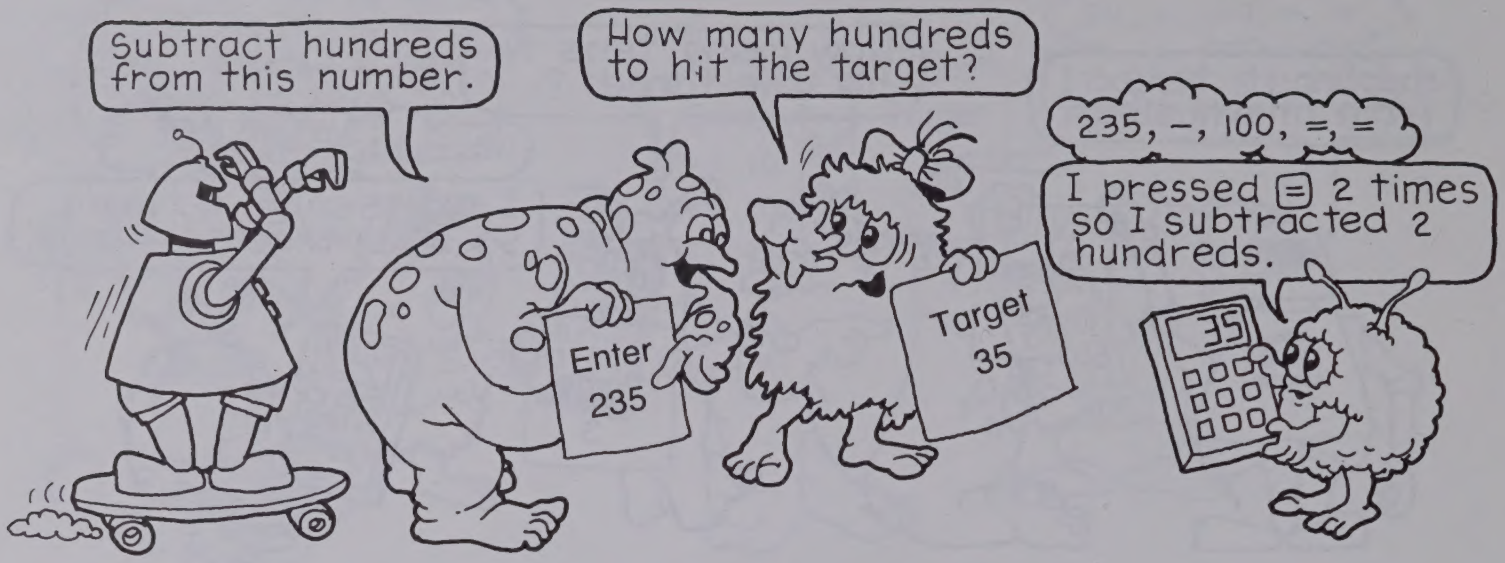
How many tens will you subtract to hit the target?

	Enter	Target	How many tens? Guess	How many tens? Check
①	43	3	______	4
②	36	6	______	3
③	78	38	______	4
④	84	54	______	3
⑤	90	20	______	7
⑥	75	5	______	7
⑦	36	6	______	3
⑧	79	19	______	6

Students should carefully watch the display as they subtract tens.

Totaling Hundreds

Name ____________________


Subtract hundreds from this number.
How many hundreds to hit the target?
235, −, 100, =, =
I pressed = 2 times so I subtracted 2 hundreds.
Enter 235
Target 35
35

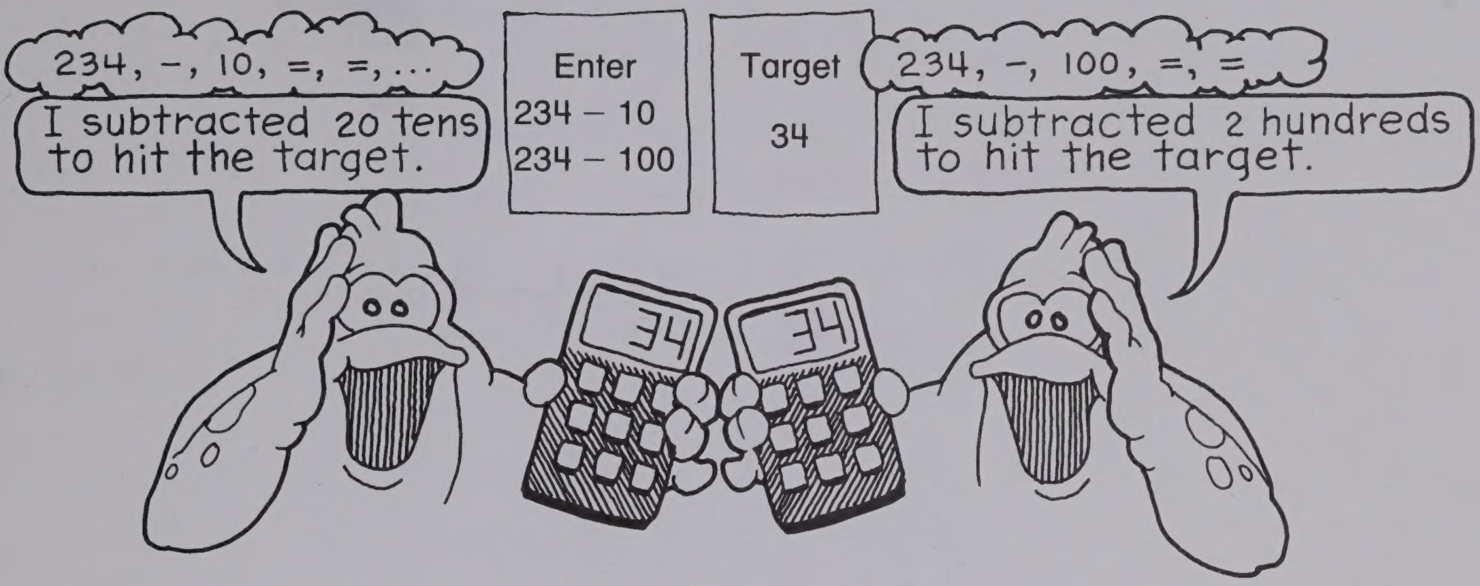
Since students will be subtracting hundreds from each number below, the *Enter* number is always followed by −100 = = =, . . . Students should record their guesses before using their calculators to check.

How many hundreds will you subtract to hit the target?

	Enter	Target	How many hundreds?	
			Guess	Check
①	115	15		1
②	238	38		2
③	297	197		1
④	400	200		2
⑤	534	134		4
⑥	729	529		2
⑦	906	206		7
⑧	1461	461		10

Two-way Targets

Name ________________


234, −, 10, =, =, ...
I subtracted 20 tens to hit the target.
Enter
234 − 10
234 − 100
Target
34
234, −, 100, =, =
I subtracted 2 hundreds to hit the target.
34
34

It will be helpful to read through the cartoon with your students.

Students will be subtracting tens and hundreds from each number below. Guesses should be recorded before calculators are used to check.

How many tens will you subtract to hit the target?
How many hundreds?

	Enter	Target		Guess	Check
①	160 − 10	60	How many tens?	______	10
	160 − 100		How many hundreds?	______	1
②	191 − 10	91	How many tens?	______	10
	191 − 100		How many hundreds?	______	1
③	322 − 10	122	How many tens?	______	20
	322 − 100		How many hundreds?	______	2
④	500 − 10	300	How many tens?	______	20
	500 − 100		How many hundreds?	______	2
⑤	843 − 10	543	How many tens?	______	30
	843 − 100		How many hundreds?	______	3

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